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No. 14

USDA Entomologists Advance New Ways To Control Insects

Sterilization by Radiation, Use of Attractants Studied

WASHINGTON—New methods of controlling certain insect pests are being advanced by the research of U.S. Department of Agriculture entomologists.

Two of their new methods—sterilization of male insects by radiation and the use of attractants added to insecticides—have already proved useful in large-scale insect pest control campaigns, the entomologists report.

An attempt is being made to eradicate screwworms from the southern part of the U.S. by use of the sterilized insect method. USDA's Agricultural Research Service, in co-

(Turn to INSECTS, page 17)

Firm Shows New Interest in Plant Site in Washington

KENNEWICK, WASH.—Renewed interest in the site on which it has an option to build a fertilizer plant, has been shown by the Bunker Hill Co., according to information received here last week.

The report was backed by an announcement in Spokane by W. G. Hewitt, a company official. He revealed that the first phase of the chemical plant will cost \$4,000,000 and will be constructed at either the Kennewick or Kellogg, Idaho site.

Mr. Hewitt said that the plant is "aimed at profitably utilizing the excess sulphuric acid which will become available in 1960." Bunker Hill produces sulphuric acid at its zinc plant at Kellogg.

Selection of the Kennewick site will depend on further evaluation of the potential agricultural and industrial use of gypsum in the Columbia basin, Mr. Hewitt said. A large tonnage of gypsum will be available as a by-product from the type of fertilizer operation in which Bunker Hill plans to engage.

Synthetic Ammonia Plant Scheduled for Opening in Peru

LIMA, PERU—Peru will put on stream in April, at Callao, its first synthetic ammonia plant. Designed and built by Montecatini of Italy and employing a Fauser-Montecatini process, the plant will produce in addition to ammonium sulfate and ammonium nitrate fertilizers, anhydrous ammonia, nitric acid and ammonium nitrate.

The \$10 million Callao installation will be operated by Fertisa—Fertilizantes Sinteticos S.A.—with headquarters in Lima. Peruvian investors subscribed most of the 5 million dollar capital of Fertisa, while the remaining financing was secured on a long-term loan from an Italian bank.

According to Fertisa, the Callao plant is the first in South America to make hydrogen by the partial combustion of fuel oil, using a process developed by Montecatini and in industrial use in Italy and other countries. Northern Peru will supply the fuel oil available in large quantities in that area. Capacity of the partial combustion plant is 16,500 metric tons per year.

A feature of the fertilizer grade ammonium nitrate plant is its use of a granulating device based on revolv-

(Turn to PERU PLANT, page 17)

Alaska Shares Cutworm Problems with Her Sister States, Entomologists Hear

COLUMBUS, OHIO—Alaska has already acquired at least one agricultural problem common to the remainder of the U.S. This is the problem of an outbreak of climbing cutworms. These pests appeared in great numbers during the short growing season of that far northern state and devoured rhubarb, strawberries, cabbage, broccoli, peas, and carrots in home gardens and even became an annoyance by climbing walls of houses.

This report was given by Richard H. Washburn, entomologist from Pal-

mer, Alaska, before the recent North Central Branch of the American Entomological Society meeting here.

New insecticides now available for use aided in suppressing the outbreak, Mr. Washburn said, but the greatest aid came from biological control through an insect parasite and a contagious virus disease of the cutworms. These natural control agents were so effective as to make another outbreak in 1959 quite unlikely, according to the Alaskan entomologist.

The meeting, attended by entomolo-

(Turn to AGRONOMISTS, page 5)

USDA Asks Funds For Continuation of Pest Control Work

By JOHN CIPPERLY

Croplife Washington Correspondent

WASHINGTON — A report from the House Subcommittee on Agricultural Appropriation takes a dim view of the White House budget proposals to cut back funds for Soil Conservation Service and agricultural conservation programs.

Going into specific programs for appropriation purposes top U.S. Department of Agriculture specialists told the subcommittee that it needed more money for extermination of the soybean cyst nematode. Dr. M. R. Clarkson, head of the regulatory programs of the Agricultural Research Service, told the group that USDA has seen this pest brought under effective control. He commented, however, that final extermination of this nematode would take another five years of intensive activity. He said that this activity would require work on an estimated 20,000 acres.

Dr. Clarkson told the subcommittee that the expansion of witchweed infestation is about 20% more than a year ago when he reported to this

group. He said that such increases will continue unless active suppressive measures are taken. He reported that the witchweed infestation is heaviest in certain areas of the commercial Corn Belt where production must be discontinued in badly infested areas.

The fire ant problem has been attacked in about 900,000 acres of farm land running from North Carolina into Texas, Dr. Clarkson said. USDA has effected control and extermination in about 70,000 acres which he described generally as counties with the least infestation.

Treatment under USDA direction has consisted of use of pesticides incorporated in farm use of fertilizer materials.

Dr. Clarkson noted the public criticism of the USDA extermination program as to its effects on wildlife and in some few instances on poultry and cattle. But, he said such instances are few and far between and insignificant when compared to the ultimate damage to agriculture if the fire ant is not eliminated.

He asked the subcommittee to approve the USDA request for fire ant appropriation of \$2.5 million for the coming fiscal year. The cost of treating lands infested by the fire ants varies from \$4 to \$5 per acre.

The USDA attack on the gypsy moth infestation is again only a start on this problem wherein USDA is moving on the periphery of the infested area. The program was not aid-

(Turn to USDA PROGRAMS, page 17)

TVA Seeks Ways To Make Super Acid

WILSON DAM, ALA.—Ways to convert commercial wet-process phosphoric acid into a "super" acid are being sought by engineers of the Tennessee Valley Authority, the agency reports. Superphosphoric acid has been produced by TVA for more than a year by the electric furnace method, and the new material has demonstrated a number of advantages, TVA says.

Concentrated liquid fertilizers can be made with superphosphoric acid, said to be about 40% more concentrated than the usual commercial acid. There are numerous possibilities of using it to make high-analysis triple superphosphate and other solid fertilizers, the engineers say.

"Superphosphoric acid made by the electric-furnace process imposes some limitations on its use in fertilizers in cost and available supply," they continue. "Mainly because of lower cost, the phosphoric acid commonly used in fertilizers (except liquid fertilizers)

(Turn to TVA, page 5)

CALIFORNIA RESEARCH ROUNDUP

Gibberellin Studies Show Promise Plus Unknowns

BERKELEY, CAL.—What is the current status of gibberellin? How effective is it? During recent years, reports both favorable and unfavorable have been heard. Lately, this material has been the subject of broad studies by researchers on three campuses of the University of California in an effort to trace the effects of gibberellin and to calculate its promises and shortcomings for dozens of commercial crops.

The scientists found the material performs well enough in a few lines

of research to earn the nod of approval for grower application. However, with some other crops, definite recommendations have not yet been made, although test results have been published so that growers who wish to do so may conduct their own limited experiments.

On some crops, the application of gibberellin has proved ineffective or even harmful, or the effects are still clouded by many "unknowns" and need more careful study.

Among the most promising (but

not always conclusive) results of recent U.C. tests:

(1) Gibberellin increased set and produced bigger grapes in certain seedless varieties, and produced a looser grape cluster in some tight-clustered varieties; in certain cases it also seemed to make grapes color and ripen faster.

(2) The chemical can lengthen the shanks of celery—a potential

(Turn to GIBBERELLIN, page 20)

Virginia Farmer Increases Corn Yield By 21½ Bushels with \$11 More Fertilizer

BLACKSBURG, VA. — Garland Fentress, a general farmer in Princess Anne County, increased his corn yield by 21½ bu. an acre above his normal yield. He gained this increase by the use of \$11.10 worth of additional fertilizer.

Mr. Fentress says, "It isn't so much the cost of producing an acre of corn, the important thing is the amount of net profit after production, harvesting and marketing costs. Seeing is believing and I saw every evidence of a bigger and better corn crop from the extra fertilizer."

E. R. Cockrell, Princess Anne County agent, points out that in southeastern Virginia, high corn yields are expected and received; however, the net profit is often low. In view of this situation the extension service organized a group of farmers into a "Corn Net Return Improvement Demonstration." Mr. Fentress was asked to be one of the demonstrators.

"I was very anxious to participate because I wanted to know if my way of producing corn was right," he said, "and if I was wrong, what could I do to improve my net income?"

"I had two fields of corn. Each field was treated the same with the exception of the fertilization and planting rates. On both fields I used a good late variety of corn seed recommended by the extension service. In my demonstration plot, I planted at the rate of 13,000 stalks an acre. In my field to be treated like I al-

ways produced corn, I planted at the rate of 10,000 stalks an acre." (Mr. Cockrell contends that southeastern Virginia farmers can plant at a heavy rate since climatic and growing conditions of the area are excellent.)

After taking soil samples of the demonstration field, Mr. Fentress discussed with his county agent his fertilization program. Based on the soil tests, Mr. Fentress used 800 lb. of 4-12-12. Half of this was broadcast before planting; the other half was put in the row at planting time. In addition to the complete fertilization, he side-dressed with 90 lb. of nitrogen at the last cultivation. In the comparison field only 400 lb. of 4-12-12 were used. This was applied in the row at the time of planting.

Mr. Cockrell added that in order to obtain accurate information each field was measured and the corn weighed. The difference per acre was 21.5 bu. The \$11.10 difference for fertilizer was returned and in addition there was \$15.90 net profit an acre.

Connecticut Fertilizer Tonnage Decreases

NEW HAVEN—Fertilizer tonnage sold in Connecticut in the year ending June 30, 1958 (excluding small-package sales) amounted to 77,441 tons, of which 54,152 were of commercial mixtures. This was nearly 12% below the tonnage sold in the preceding year, according to Dr. H. J. Fisher, chemist in charge of fertilizer inspection and analysis.

Dr. Fisher reported that 5-10-10 and 10-10-10 accounted for 40% of all mixed fertilizer tonnage. A year earlier these two grades represented only 30% of the total in this classification. Tonnage of vegetable meals and home mixes continued to decline in 1958, as in 1957, presumably reflecting reductions in tobacco acreage.

Joseph LaBarbera Promoted by Beaird

SHREVEPORT, LA. — Joseph LaBarbera has been advanced from manager of production to vice president of manufacturing of the J. B. Beaird Co., Inc., Shreveport, manufacturer of heavy steel products for the oil, gas and chemical industries. J. L. Tullis, president and general manager, has announced.

Mr. LaBarbera, who joined Beaird as assistant plant superintendent in April, 1955, was promoted to manager of production, Oct. 1, 1957. In his new capacity, he will be responsible for all manufacturing operations of the company's three plants, in Shreveport, Clinton, Iowa, and Stockton, Cal. Mr. LaBarbera formerly was general superintendent of Vicksburg Tank Co. and served for a number of years with Carbide and Carbon Chemical Co. in Oak Ridge, Tenn.

Louisiana Farmers Use 15 Million Pounds Of Poison Dust During 1958 Insect War

BATON ROUGE, LA.—Louisiana farmers used 15,000,000 lb. of poison dusts, 550,000 gal. of liquid spray concentrates and more than 5,000,000 lb. of granular insecticides in their war against insects in 1958, says Kirby L. Cockerham, entomology specialist with the Louisiana State University Agricultural Extension Service.

The volume of dusts was down about 3,000,000 lb. from 1957, chiefly because of reductions in cotton acreage allotments and the lighter boll weevil infestation in 1958. Spray concentrate use was about the same. Use

U.S. Sulphur Output Declines in 1958

NEW YORK—Total production of sulphur from all sources in the U.S. during 1958 amounted to approximately 6.2 million long tons, compared with 7 million in the previous year, according to the annual report of Texas Gulf Sulphur Co.

Shipments of Frasch sulphur by U.S. producers dropped some 8%, or 400,000 tons below the 5 million tons shipped in 1957. The decline was due to the lower demand resulting from the recession, an increase in sulphur imports plus a gain in the output of recovered sulphur, the firm said.

Arizona Entomologist Issues Pest Warning

TUCSON, ARIZ. — Aphids, spider mites and cutworms may cause trouble unless they're controlled soon, Dr. James N. Roney, entomologist for the University of Arizona Agricultural Extension Service, said in Tucson recently.

Dr. Roney reported pea aphids were light on alfalfa in Graham County; that green peach aphids increased slightly on lettuce in Maricopa County; and that black clover aphids were heavily infesting some dooryard plantings of citrus in the Phoenix area. Annual flowers, such as snapdragons and stocks in the lower elevations of Arizona, now are particularly vulnerable, he said.

Spider mites also have been showing up on a lot of shrubs and evergreens in Arizona, particularly around Coolidge and Eloy. Cutworms also may be a problem in northern Arizona where tomatoes, peppers and annual flowers soon will be planted out.

California Smog Harm Increasing over State

RIVERSIDE, CAL.—Air pollution is hitting more and more California farmers in the pocketbook, says a University of California scientist.

John T. Middleton, Riverside plant pathologist, reports that statewide smog damage to crops now amounts to \$8 million a year.

Although crop damage in Los Angeles County, the original "home" of smog, has decreased in the last year, it is increasing in the Riverside-San Bernardino area, in the San Francisco Bay area and in the San Joaquin Valley, notes the chairman of the university's statewide air pollution research committee.

Air pollution from automobiles, light industry and home sources is threatening crops around Stockton, Bakersfield and Fresno, he adds. Smog is developing there as a result of increasing population and without the heavy industry associated with air pollution in other areas.

Tomatoes, lettuce, spinach, celery, grapes, cotton, alfalfa and citrus are susceptible victims of air pollutants, Mr. Middleton points out. Oxidants and ozone cause brown blotches on leaves, reducing plant growth and cutting yield in many cases.



Dan N. Lilly

BRANCH MANAGER—Dan N. Lilly has been appointed branch manager for the Thompson-Hayward Chemical Co. branch in Oklahoma City, Okla., announced R. S. Thompson, president of the Kansas City firm. Mr. Lilly has been associated with the company since 1952 at the Kansas City office. Prior to that he worked with the Victor Chemical Works in Chicago. He is a University of Nebraska graduate.

W. W. Layne Named Calspray Officer

RICHMOND, CAL.—The appointment of W. W. Layne as vice president of California Spray-Chemical Corp. was announced by A. W. Mohr, president, following a meeting of the Calspray board of directors. Mr. Layne, who is a member of the board and also serves as assistant secretary-treasurer and comptroller, will celebrate his 10th year with the company this coming May.

Before joining Calspray, Mr. Layne was with the Standard Oil Company of California for 27 years. During his tenure there, he was associated with the comptroller's department for 5 years, and prior to that with the manufacturing department.

He is a native of Lynchburg, Va., and was educated in the school system of that state.

Wyoming Entomologist Sees Threat of Army Cutworm Attack in State

LARAMIE, WYO. — Army cutworms are likely to march on Wyoming alfalfa fields this spring, according to R. E. Pfadt, Wyoming University entomologist.

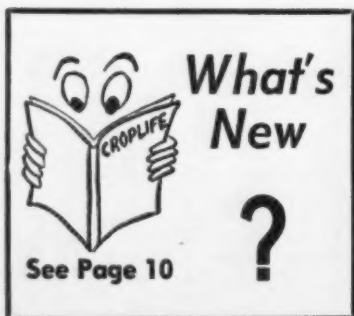
His prediction stems from "light trap" catches of cutworm moths and alfalfa field counts of cutworm larvae last fall.

Researchers found that alfalfa plots with simulated cutworm damage yielded 1¼ tons less hay per acre than undamaged plots. They simulated the damage in the spring by using lawnmowers on plots at the Torrington experimental substation. The mowing held the alfalfa back 4 weeks.

To prevent losses, Mr. Pfadt said growers can do a double purpose job with early application of dieldrin—6 oz. an acre. Dieldrin controls both cutworms and alfalfa weevils, Mr. Pfadt stated.

Tipoff to cutworm invasion is a brown "wintry" look that stays on in some fields 4-6 weeks after other fields nearby have turned green in the spring. They seldom attack all the fields in an area.

As a final check, growers can look for cutworms under field litter at the base of plants in brown fields. Besides alfalfa, cutworms damage sugar beets, corn, small grains, vegetables and flowers.



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Forest Farmers Hear Fertilizer Report at Washington Meeting

PULLMAN, WASH.—Over 150 tree farmers and foresters heard the "Progress Report on Forest Fertilizer Use" presented at the recent 15th annual meeting of the Western Washington Farm Forestry Assn.

The panel which presented some of the recent findings in forest soil fertility was made up of Dr. S. P. Gessel, associate professor of the forestry department of the University of Washington; Dr. Ken Turnbull, University of Washington; Dr. C. H. Rowles, University of British Columbia, and Dr. Darrel Turner, Western Washington experiment station. F. Todd Tremblay, regional director of the National Plant Food Institute, moderated the panel.

Dr. Gessel led off the discussion with a brief report on their studies at Pack Forest and other locations in western Washington.

"A tree is just like any other crop. It needs moisture and plant nutrients for maximum growth and yields," he said. Research so far indicates that proper use of fertilizer has a definite place in forest land management.

Dr. Gessel demonstrated by use of colored slides the actual growth increases and color differentiation which could be brought about by use of fertilizers.

"Nitrogen is the element most usually lacking in the soils of the Douglas fir region," he stated, "but we have had response to phosphorus and other elements in some areas."

Dr. Gessel referred to experiments on Christmas trees which indicated that the use of fertilizers had brought about a beneficial change in foliage color and general tree vigor from an August nitrogen application to trees harvested in November. He emphasized the need to apply nitrogen late in the season to Christmas tree crops so as to avoid stimulating excessive leader growth which would be undesirable for the best form in Christmas trees.

Dr. Turnbull stressed the need of more experimental studies in forest tree fertilization.

"There is no reason why tree farmers shouldn't put out trial demonstrations of their own to determine fertilizer effects," Dr. Turnbull said. He then pointed out that there are many county foresters who would be available to cooperate in setting out a fertility plot.

Dr. Turnbull, who specializes in forest mensuration, said that there was a need for simple instructions as to the methods of determining possible increases in growth due to fertilizer applications.

"It is our hope to put out a do-it-yourself leaflet which will give concise instructions on how to measure increased growth and height of a tree so that good records can be obtained," he said.

Dr. Rowles told briefly about the work on fertilizing forest trees that was being carried on in British Columbia.

"In general, forest tree soils are very infertile," he said. He noted that very little was known about the characteristics of forest soils, and that very few of them were even included in the normal soil surveys.

"A lot more research is needed on the fertility requirements of our forests and now is the time to get started on the detail work to solve the problem," Dr. Rowles said.

Dr. Turner, soil scientist from Pullman, discussed briefly the work he

had done on fertilizing floral brush crops.

"Our work indicates that fertilizer can have a very beneficial effect on the quantity and quality of the brush crops such as huckleberry and salal grown in association with forest trees," he said, "and work along this line will be expanded in various areas of western Washington."

Mr. Tremblay, panel moderator, summarized the hour long session by saying, "Exploratory work to date has indicated the tremendous fertilizer use potential in the forests. The excellent field work being done by Dr. Gessel and other panel members needs to be increased many times under a variety of soil and climatic conditions so as to build up a backlog of research information which will be useful to the forest industry in the future."

Omar Sanders, Industry Pioneer, Dies at 67

SARASOTA, FLA.—Omar Sanders, consultant to National Potash Co., died March 29, at his home in Sarasota, Fla. He was 67 years old.

Mr. Sanders was associated with the fertilizer industry for 40 years. After 16 years with Armour Fertilizer Works, he became manager in 1934 and later vice president of Fertilizer Industries Inc. Shortly after his retirement in June, 1957, he became consultant for National Potash, a subsidiary of Freeport Sulphur Co. and Consolidation Coal Co.

New Mexico Feed Group Extends Membership To Farm Chemical Men

ALBUQUERQUE, N.M.—Agricultural chemicals manufacturers and dealers are now invited to join the New Mexico Grain & Feed Dealers Assn., according to Parley G. Jensen, NMGFDA executive secretary.

The decision to extend the membership was reached at a meeting of the feedmen in Albuquerque after a committee of farm chemicals people, led by Seldon Baker of Hatch, N.M., asked for the opportunity to affiliate.

Mr. Baker said that members of his industry in New Mexico felt a need for an organization to represent them and keep them informed on legislative and other matters affecting farm business.

York Fertilizer Buys Firm in Washington

MILTON-FREEWATER, ORE.—Bill York, York Fertilizer Co., announces the purchase of Tusko Fertilizer Co., Walla Walla, Wash. The purchase is in the form of an expansion for the York firm.

Offices are to be maintained in Milton-Freewater and the organization plans to handle all types of fertilizers and will serve Umatilla, Walla Walla, Union and Morrow counties in Oregon; Walla Walla, Franklin, Benton and Garfield counties in Washington.

NEW COMPANY

RIVERTON, WYO.—A new company has been established in Fremont County called the Fremont Mining & Manufacturing Corp., to produce soil conditioning products. Ray L. Atwood is president and treasurer and W. S. Wall is vice president.

Minnesota Fertilizer Group Pledges Support Of Pasture Program

ST. PAUL, MINN.—The executive committee of the newly-formed Minnesota Fertilizer Industry Assn., which met here April 1, agreed to assist the National Plant Food Institute and the University of Minnesota extension service in an intensive pasture demonstration program to take place in Winona and Carlton counties.

According to Dr. Robert D. Munson, secretary of the association, the objective of the program will be to assist farmers in learning correct pasture management practices.

He said a chart had been developed by the cooperating agencies to assist county agents and others conducting the demonstrations in setting up the program in various areas.

In other business, the association set up five new committees. They are: Membership, Ralph Willits, Spencer Chemical Co., chairman; educational, L. O. Peterson, Armour Fertilizer Works, chairman; program, Philip F. Stocker, Land O'Lakes Creameries, Inc., chairman; legislative, M. W. Mawhinney, Smith-Douglass Co., Inc., chairman, and research and information, R. A. Fancher, Welcome Agriculture Chemical Co., chairman.

The association now has 28 active and two associate members, Dr. Munson said.

The next meeting of the executive committee has been tentatively set for May 20, at the seminar room, Soils Building, University of Minnesota, St. Paul campus.

Hayes-Sammons Sales Up 219% in Four Years

MISSION, TEXAS—A net sales increase of more than 219% since 1954 for the Hayes-Sammons Chemical Co. of Mission, Texas, was announced by Thomas B. Sammons, Jr., president.

Hayes-Sammons, formulator and distributor of chemicals for agriculture, the oil industry and home use under the Mission Brand label, reported total sales of \$8,576,911 in 1958 compared to \$2,658,658 in 1954.

Expansion plans for the company include a new research and development laboratory.

The firm began as a local hardware and feed store, owned by Albert Sammons, early in the original development period of the Rio Grande Valley. In 1909 Thomas Sammons, Sr., joined his brother in the operation of the small store.

Today the company operates three plants and five affiliate companies. The plants are located in Mission, Texas; Indianola, Miss., and Reynosa, Mexico, with distribution throughout the Cotton Belt from Alabama to New Mexico and in Central America, South America, Mexico and the Far East.

Entomology Research Center Adds New Staff Members

BROWNSVILLE, TEXAS — The Entomology Research Center, formerly the Brownsville Pink Bollworm Research Laboratory, has added Dr. Milton T. Ouye to its staff, according to Dr. Dial B. Martin, director.

Dr. Ouye, a native of Hawaii, is a graduate of Kansas State University and will do work on the mass rearing technology and nutrition of the pink bollworm. This is the work done previously by Dr. Erma S. Vanderzant of College Station who will now concentrate on boll weevil work.

Other recent additions to the staff include Dr. H. M. Taft, Jr., graduate of Rutgers University, who will work on toxicology and chemical control of the pink bollworm. He has worked for Hercules Powder Co. on similar problems.

Dr. Harry M. Graham, University of California graduate, is an ecologist who will work on pink bollworm hibernation and similar problems.

NPFI's 'Task Force' Meets in Georgia

ATLANTA, GA. — The National Plant Food Institute's forest fertilization "Task Force" met March 24-25 at the Dinkler-Plaza Hotel in Atlanta, Ga., to discuss fertilization research in southern forestry, announced Dr. S. L. Tisdale, NPFI regional director.

The project is under the general direction of Dr. L. C. Walker, chief forester of NPFI, and the group is composed of industrial scientists and research foresters.

The NPFI project originated as a result of recent interest exhibited by chemical companies toward a coordinated program. About 30 wood-producing industries also have expressed interest in such an effort.

Dr. Walker pointed out that research under way includes (1) nutrient applications to stimulate growth of pines and hardwoods in plantations and natural stands, (2) stimulation of seed production in orchards and forests, (3) the relation of fertilizer applications to wood quality, and (4) basic nutritional studies.

Among the items considered at the Atlanta meeting, according to Dr. Tisdale, was the establishment of a clearing house of experiments under way in order for interested parties to be kept informed of progress in research. The group also agreed to encourage the establishment of a service laboratory to handle analyses of soils and plant tissues. Priorities for forest fertilization research were suggested and requests from research organizations for financial aid were considered.

Other members of the task force present at the meeting were: Dr. L. E. Loveless, Monsanto Chemical Co.; Dr. Louis Metz, U.S. Forest Service; Dr. W. W. Rennie, E. I. du Pont de Nemours & Co.; Dr. J. E. Sedberry, American Potash Institute; Dr. H. J. Stangel, Allied Chemical Corp.; Donald D. Stevenson, Buckeye Cellulose Corp., and Dr. F. W. Woods, Duke University. Dr. R. L. Beachler, Dr. W. H. Garman and E. K. Chandler, all of the NPFI, also participated in the conference.

Farmers Report Good Results with Fertilizer

LAS ANIMAS, COLO. — Increased yields through the use of chemical fertilizers were reported by farmers attending a Tennessee Valley Authority farm test demonstration program here.

The farmers, selected for the test program in four southeast Colorado counties, reported that the average increased yields amounted to 1.5 tons for sugar beets, 16 bu. for sorghums, 12 bu. for corn, 2.7 tons for corn silage, 14.8 sacks for potatoes, 3.2 sacks for onions, 13 bu. for wheat, 9 bu. for oats and 625 lb. for popcorn.

The ratio of increased yields to cost of fertilizers is to be worked out as soon as all the reports on the program have been completed.

Leading in the discussions were Gene Allred and C. A. Flowers, Knoxville, TVA representatives; Rodney H. Tucker, extension agronomist, and Bill Stewart, assistant agronomist, of the extension service, Colorado State University, Ft. Collins.

It was stated that the program which will extend over a five-year period is for experimental testing only, with TVA distributing the chemical fertilizers through local dealers. The fertilizers used first year were composed of nitrogen, phosphate and potash in the formulas 21-53-0, 30-10-0 and 0-54-0 and ammonia nitrate.

For the future of the program, the farmers were urged to keep better records, test soil earlier and have accurate harvesting data.

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Californians Ask Repeal of Walnut Husk Fly Quarantine

SACRAMENTO—The California Department of Agriculture proposes to repeal its walnut husk fly interior quarantine and to remove the insect from the list of pests whose entry from other states is prohibited.

All interested persons are invited to attend a public hearing to be held in the Conference Room, Department of Agriculture Building, Sacramento, at 10 a.m., April 21.

Department officials said that the walnut husk fly is now so widespread in the commercial walnut producing areas of California, it appears that quarantine action is no longer effective in preventing or retarding spread to noninfested areas of the state.

With the proposed repeal of the California interior quarantine against the pest, the department suggests the interstate quarantine against it, applied by California to incoming material from other states, should also be repealed.

The walnut husk fly was first found in California in the Chino area of San Bernardino County in 1929. By 1932, despite quarantine, control and eradication measures, the insect had spread over some 500 square miles, involving approximately 2,000 acres of commercial walnuts in the southern counties, and in 1933 the quarantine was lifted. The husk fly continued its natural spread throughout the commercial walnut producing areas in the southern counties, and by 1955 had spread west into Ventura County and as far north as Frazier Park in the Tehachapi Mountains in Kern County.

The quarantine was re-issued in September, 1956, regulating all of Imperial, Los Angeles, Orange, Riverside, San Diego, and Ventura counties, and portions of Sonoma, Kern and San Bernardino counties. A month later quarantine lines were extended in Sonoma and Kern counties, and newly-found areas were placed under quarantine in Napa and Santa Barbara counties.

Continuing surveys disclosed spread beyond quarantine lines in Kern, Napa, and Santa Barbara counties, and the lines were again extended in September, 1957, to take in additional areas in these counties, and new areas were added in Merced, Santa Clara and Stanislaus counties. A portion of San Joaquin County was placed under quarantine in September, 1958. Flies have also been trapped in Mariposa, Tuolumne, Calaveras and Santa Cruz counties, which have not been added to the quarantined area.

At present more than one-half of the total commercial walnut acreage in this state lies in the 18 counties now known to be infested with walnut husk fly.

Chemical Safety Workshop

WASHINGTON—Safety in chemical industry operations and the handling of chemicals will be discussed at a workshop sponsored by the Manufacturing Chemists' Assn., May 21 at the Palmer House in Chicago.

Members of the group's safety committee and S. F. Spence, American Cyanamid Co. and J. S. Queener, E. I. du Pont de Nemours & Co., will form the discussion panel.

No program has been prepared, but the morning and afternoon sessions will be devoted to discussion of safety problems on questions raised by

CHEMICAL BULLETINS

BERKELEY, CAL.—Four bulletins on when and how to spray chemicals to control pests on four crops have been issued by the University of California. They are the 1959 Pest Control Programs for Pears, Cherries, Apricots, and Apples, respectively listed as Leaflets 71, 72, 74, and 76, and are obtainable without cost through Agricultural Publications, 22 Giannini Hall, University of California, Berkeley 4.

AGRONOMISTS

(Continued from page 1)

gists from 15 states, aimed at coordinating the efforts of research, teaching and extension in the field of insect behavior and control.

Dr. H. H. Ross, entomologist of the Illinois Natural History Survey, told the entomologists that the destructive potato and bean leafhopper survives the winter only in southern states bordering the Gulf of Mexico.

Through species studied in collections from tropical areas of Central and South America he concludes that this pest winters from central Florida westward around the Gulf from Florida to southern Texas and also over the warmer areas of California. Previously this insect had been thought to overwinter in countries south of the U.S. or even in South America.

In the spring it develops on plants along the Gulf coast of our southern states and during May and June is wind borne to the Midwest states. Here it appears early in June to infest beans, potatoes and alfalfa. This leafhopper is a serious pest of all three of these crops, and unsprayed potatoes or beans have their yields cut severely through its feeding on the foliage during the summer and autumn.

Alfalfa is also seriously damaged in July and August. None of these insects are known to survive the winter in areas north of the Gulf coast states and they migrate each spring, being carried many miles by aid of the air currents. In the northern states three or four generations are raised and their damage to potatoes is characterized by dead leaf margins and finally the death of the plant. On alfalfa they turn the leaf yellow and stunt the growth, while on beans they distort the foliage and stunt the plants in their feeding on the under surfaces of the leaves.

The Japanese beetle, long a serious pest of many crops in the New Jersey and eastern Pennsylvania areas, probably will be much less destructive to crops when it becomes distributed throughout the Midwest states, Dr. J. B. Polivka, entomologist at the Ohio Agricultural Experiment Station, told the gathering.

The history of this beetle's destruction to cultivated crops along the Atlantic Coast is not being repeated in Ohio where it has been present for over a quarter century. Dr. Polivka, who has been studying this beetle in Ohio, states that the insect probably has reached its maximum development in both population and the amount of damage it can do in the Cleveland, Youngstown, Steubenville and isolated areas in eastern Ohio.

In those cities it has defoliated certain shade trees as well as some ornamental shrubs, injured the bloom of roses and other perennials, and the grubs have damaged turf. While it has been present in local areas near Columbus, Newark and Barnesville, for fifteen years, it has caused little or no damage to cultivated plants or to turf in those areas.

Dr. Polivka said he believed the insect probably will follow this pattern in its westward spread and will not be a serious threat to field crops in the Midwest.

The beetles have not damaged commercial vegetable or fruit orchards in Ohio. It has been of greatest concern to nurseries in northeastern Ohio where quarantine measures restrict the movements of balled nursery stock and affect the market distribution of their products.

The speaker stated that the beetles may continue to be a pest of shade trees, roses, and some other ornamentals as it continues to spread westward. However, it yields to spraying if honest efforts are made to protect the ornamentals.

3 for 1 Stock Split Sought by Agrico Board

NEW YORK—The board of directors of the American Agricultural Chemical Co. has recommended to the stockholders that the common stock of the company be split three for one and that the authorized common stock be increased from 700,000 to 2,500,000 shares.

A special meeting of stockholders to act upon the proposal will be held on April 29, 1959. If approved by the stockholders, it is expected that the proposed split will become effective on May 5, 1959.

In announcing the action, C. M. Powell, president, stated that the company is planning to offer the public additional shares of its common stock shortly after the stock split becomes effective. It is expected that approximately \$7 million of additional equity capital will be raised through this offering, which will be underwritten by underwriters headed by Hayden, Stone & Co. No offering will be made until after a registration statement to be filed by the company with the Securities & Exchange Commission has become effective.

Mr. Powell also announced that, subject to the approval by the stockholders of the stock split, the board of directors had declared an initial quarterly dividend of 40¢ a share on the common stock as outstanding after the stock split, including the additional shares to be offered to the public. Such dividend will be payable on June 26, 1959, to stockholders of record on June 12, 1959.

Lack of Labor Supply Prompts Herbicide Use

EL PASO, TEXAS—The growing difficulty in getting Mexican labor to harvest cotton and the resultant increase in mechanical pickers have caused a much wider acceptance of herbicides for weed and grass control in this area.

Cotton must be cleaner for mechanical pickers and workers are hard to find during hoeing season. Farmers started using herbicides a few years ago and each year are increasing the amount.

One of the kinds being used is Karmex Diuron. Dr. P. J. Lyerly of the Texas Experiment Station at Ysleta estimates that this herbicide will be used to treat 50,000 acres in the El Paso and Trans-Pecos area this year.

Myrven H. Cron Joins Texas Steel Pail Firm

DALLAS, TEXAS—Gordon D. Zuck, president of Southwestern Steel Container Co. here, has announced the appointment of Myrven H. Cron as sales-service representative for the Houston area.

A native of Texas, Mr. Cron attended Rice Institute and received his degree in chemical engineering. He has been actively engaged in serving the paint, oil, food and chemical industries.

Iowa Dealer Moves

FORT DODGE, IOWA—The Hamilton Co., dealer in seeds, chemicals, insecticides and farm equipment, has moved to a new location at 3010 Fifth Ave. So., providing more storage and display room and ample parking space. The company has been in operation for more than 90 years. It has leased two acres of land and a 50 by 140 ft. steel warehouse at the new location. The home office is at Cedar Rapids, Iowa.

OPEN HOUSE

OSKALOOSA, IOWA—The Allied Gas and Chemical Co. held open house recently at its new mixed fertilizer plant across the road from the Oskaloosa airport. The company's latest equipment for spreading and applying liquid mixed fertilizer was on display.

Herbicide Successful In Wyoming Experiments

LARAMIE, WYO.—The new herbicide, diuron, proved successful in killing annual weedy grasses and broad-leaved weeds in alfalfa experiments in Fremont County from 1956 to 1958.

According to F. L. Timmons and L. W. Weldon, agronomists for the U.S. Department of Agriculture Crops Research Division stationed in Laramie, diuron controlled 83 to 99% of the annual weeds in alfalfa and 90% of the volunteer alfalfa seedlings.

Fire Destroys Plant

SACRAMENTO, CAL.—Fire of undetermined origin destroyed the Fersolin Corp. soil conditioner and fertilizer plant at Felton, Cal. Clifford Mills, plant manager, estimated building and equipment loss at \$115,000. The plant was opened in February.

BRUSH CONTROL LEAFLETS

COLLEGE STATION, TEXAS—Chemical brush control is discussed extensively in three leaflets published by the Texas Agricultural Extension Service here. They are L-413, "Brush Control with Ammate," L-414, "Brush Control with 2,4,5-T" and L-415, "Chemical Brush Control." Authors are G. O. Hoffman and B. J. Ragsdale, extension range specialists.

TVA

(Continued from page 1)

is wet-process or 'green' acid. So, a logical step is to see if wet-process acid can be concentrated to make a product with the advantages of superphosphoric acid.

"Wet-process acid is a very crude material and is hard to handle and store without special treatment. It contains impurities that clog pumps, lines, and storage tanks. It would seem that concentrating such material would make it even more troublesome." However, experience has indicated the opposite to be true.

In TVA tests, wet-process acid was concentrated well above the concentration of commercial acid and the heavier acid deposited little or no impurities. According to the TVA investigators, the reason for this is that some of the acid is converted to pyro- and poly-phosphates that sequester impurities and prevent their deposition. The heavy acid is viscous but does not seem to be too thick for pumping.

Several other advantages are foreseen for the concentrated wet-process acid. It is more concentrated than the usual commercial acid and could be shipped at substantially lower cost in terms of contained phosphate, provided freight rates are the same. Furthermore, it has proved suitable for making clear, or fairly clear, liquid fertilizers.

This is regarded as an important advantage, because wet-process acid of the usual concentration deposits a very heavy precipitate when it is ammoniated to make liquid fertilizers. For this reason, most liquid fertilizer manufacturers use the more expensive furnace acid.

When used to make solid mixed fertilizer, the concentrated wet-process acid has the advantage of lower water content, and hence the mixed fertilizer products require less drying. It could be used in making high-analysis triple superphosphate and perhaps other very high analysis products such as ammonium pyrophosphate.

TVA engineers say they are still in early stages of the study and have no well-defined process yet for making the material. They add, however, that great interest has been shown by the industry and early development of a process—by either TVA or the industry—is expected.

STATISTICAL QUALITY CONTROL

Tolerances in Fertilizer Analysis

By VINCENT SAUCHELLI

Chemical Technologist
National Plant Food Institute

"When looking for applications of statistical quality control in a chemical plant, the place to start an investigation is in the quality control laboratory. Laboratory test results are usually accepted to explain the actual variation in a process; however, from the statistical quality control point of view, we consider three other major factors which can seriously affect the test determination. These are: (1) sampling variation, (2) testing equipment variation and (3) laboratory personnel variation."

Experience has shown that the sum of these three variations can often exceed the actual variation present in the processing and thereby vitiate the dependability of the results issued by the control laboratory. The application of statistical quality control techniques to determine the precision and accuracy of the workers in the laboratory has enabled many supervisors to raise the quality of the analysts and develop confidence in the results reported by the laboratory.

Analytical chemistry is becoming more and more important to engineers responsible for industrial processes everywhere as well as to sales personnel and consumers. For this reason it is obvious that management should know the quality of work done by analytical chemists and technicians. To obtain this knowledge and to raise the quality of work produced by the laboratory employees, many progressive companies have installed a quality control program on laboratory methods. By this means they can find out the precision and accuracy of the methods used and of the quality of the work of the control chemists.

Sampling techniques and sampling instruments may introduce variations in the chemical analysis of a fertilizer. Statistical analysis can determine whether such variations are significant.

Recent studies on this phase of chemical control seem to indicate that more significant is the thoroughness with which the manufacturer mixes his fertilizer goods. Efficient mixing in the processing stage with perhaps a narrower range in particle size of all the raw material components will do more to help the product stay within the official chemical tolerance limits than refinements in sampling techniques.

The terms "precision" and "accuracy" have been used previously in these discussions. They have an important difference in their meanings as used in statistics. Precision: when two or more experimental values agree closely among themselves but not necessarily with the true value. Accuracy: when an experimental and the true value are in close agreement. Methods or results may be precise but yet not accurate.

The composition of a fertilizer mixture must conform to a guaranteed analysis within close limits or tolerances. The lower limit is the tolerance permitted by the fertilizer statute; the upper limit is set by the manufacturer. It is a difficult operation to prepare a mixed fertilizer whose composition will exactly conform with its guaranteed analysis.

The nature of the raw materials—particle size, shape, density, moisture—and the unavoidable variations in sampling and analytical procedures, the biases of the personnel—make it almost impossible to sample and analyze a mixture without error and bias. To avoid penalties and maintain a reputation for quality goods the

fertilizer manufacturer seems to prefer to over-formulate his mixtures so as to analyze substantially above the lower limit set by the official regulations.

Dr. Walter A. Shewhart, father of statistical quality control, once said:

"It is not only what the engineer wants but what he can get, or at least get economically, that must be taken into account in the setting of tolerance limits."

Modern plant equipment can produce products of any desired degree of perfection. In practice, however, two principal limiting factors govern the degree of accuracy required, namely, (a) the intended use of the material or piece of machinery: tolerances for the quality of a phosphate destined for human food are more severe than those for a crop fertilizer; and (b) the factor of cost.

All fertilizer manufacturers are ever willing to cooperate with state control officials in their work of improving sampling and analytical techniques, because they feel it is necessary to have a system that quickly and justly differentiates between honest and somewhat dishonest or sloppy practice. But at the same time, they like to know how advisable it is to try to get such a degree of homogeneity which, while it may ease the sampling chore, may also impose a cost burden on the farmer out of proportion to its value.

This, of course, is another way of saying that the tolerances established for the determination of each plant nutrient in the analysis of a fertilizer should be imposed with careful consideration of the intended use of the product and the cost factor.

Someone has truly said, "Quality must be built into a product, it cannot be inspected into it." Building quality into the fertilizer mixed goods which meet the specifications set forth by the agronomists and horticulturists has been and generally is the aim and avowed purpose of all reputable fertilizer manufacturers. Recent developments in marketing bulk fertilizer in certain areas and which are apparently encouraged by local official agencies seem to

ignore all previous agronomic teachings about the necessity for homogeneity in the mixture and the close limits or tolerances in the guaranteed analysis.

These developments are causing serious concern to manufacturers and control officials. We do not presume to know the answer. Enforcement of the chemical control statutes or a reappraisal of agronomic teachings in the light of new evidence that should be produced by scientifically organized field tests seem to be needed. In this connection—that is, field tests—it is suggested that here also the tests should be designed by statisticians skilled in modern techniques in order to assure dependable results.

22 Fertilizer Firms
Register in California

SAN FRANCISCO—Twenty-two firms have registered with the Bureau of Chemistry of the California State Department of Agriculture to sell commercial fertilizers in the state during the three month period from mid-December to mid-March, announced Robert Z. Rollins, bureau chief.

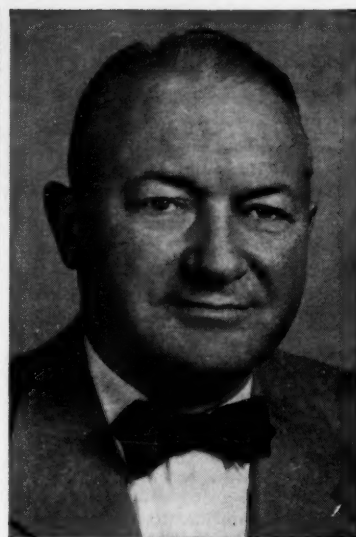
These firms include 14 in northern California, six in southern California and two from out of state. Among the 22 is one name change. The Agricultural Products Co. has become a division of Nutrilite Products, Inc., Buena Park.

Seventeen firms have registered during that period to sell agricultural minerals, including six in northern California, seven in southern California and one from out of state. Two name changes include the Cardox Corp., now known as Cardox, division of Chemetron Corp., Los Angeles; and the United States Lime Products Corp., now registered as the United States Lime Products Division of the Flintkote Co., San Francisco.

Three new auxiliary plant chemicals registrants include one from southern California and two from out of state.

OREGON APPOINTMENT

SALEM, ORE.—Gov. Mark Hatfield has approved the appointment of Hugh Taylor, 62, veteran State Department of Agriculture employee, as chief of the Division of Plant Industry, on the recommendation of Frank McKennon, whom he succeeds.



C. J. Cahill

JOINS ROYSTER—C. J. (Cash) Cahill has joined the staff of the F. S. Royster Guano Co. of Norfolk, Va. as Midwest representative in the sale of triple superphosphate and related materials, according to an announcement by Frank S. Moore, vice president of the Norfolk firm. Mr. Cahill formerly was Midwest representative for National Potash Co. He is a native of Cartersville, Iowa, and an agricultural economics graduate of Iowa State College.

Georgia Farmer Credits
"Good Information, Luck"
For Top Cotton Yield

ATHENS, GA.—J. T. Wilcox, Pulaski County farmer who produced an average yield of 1,142 lb. lint cotton an acre on nearly 20 acres, attributes his success to using the best sources of information, faith, hard work and good luck.

Mr. Wilcox planted Empire cotton and fertilized it with 700 lb. of 4-12-12. He also used 15 lb. of actual nitrogen and 15 lb. of actual potash an acre as a side dressing to produce a yield two and a half times the average for the state.

According to Dr. Ralph L. Wehnt, agronomist of the University of Georgia extension service, the wise use of fertilizer ranks high on Mr. Wilcox's list of essentials for top production. He worked out his fertilizer requirements with his county agent, M. F. Allgood, after making soil tests.

Cotton insect control also plays an important part in the Wilcox farm program, Dr. Wehnt said, pointing out that Mr. Wilcox believes that early treatment pays big dividends. He poisoned 13 times at five to seven day intervals, depending on the infestation count.

Dr. Wehnt declared that "farming for profit" is the motto of this Pulaski County farmer.

Texas Experiment Farm
Installs Soil Thermograph

BEEVILLE, TEXAS—A soil thermograph to test soil temperatures is being installed on the Beeville experiment station farm, which will help determine proper planting time. The instrument will automatically record soil temperatures and the information will be given to area farmers.

Past experiments have shown that cotton does best when planted in soils of 62° temperature or above. This is determined when the temperature does not fall below this figure for three consecutive mornings at seven o'clock. When planting inferior seed the temperature should be 70° or above.

One main advantage in waiting for the soil to warm up is that seedling diseases are much more serious when planting is done in cool soil.

Daily soil temperature readings will be broadcast over a local radio station.



TWO OF COLORADO'S top sugar beet and corn producers were honored at the National Farm and Ranch Congress meeting in Denver recently. Fred A. Seaton, secretary of the Interior (second from left), presents certificates to the farmers who were singled out as new members of the 200 Bushel Corn Club and the 10,000 Pound Sugar Club. Left to right, Dr. Richard Bahme, western regional director of the National Plant Food Institute, co-sponsor of the award; Secretary Seaton; Byers Clark of Greeley, sugar beet grower; Dale Richardson of Wiggins, 200 Bushel Corn Club, and Rodney Tucker, extension agronomist, Colorado State University, co-sponsors of the award.

*Statement from a talk by R. V. Ward, statistician, Canadian Industries Ltd.

Corn Earworm Leads List of California Pests

SAN FRANCISCO—The corn earworm continued as the number one pest on many California crops in 1958. A list of the 10 most important insect and mite species attacking California crops has been prepared by the U.S. Department of Agriculture Cooperative Economic Insect Report.

Estimated damages and losses with control costs dropped in 1958 to \$79,409,414. The comparable estimate for 1957 was \$108,398,716.

Preparing the list of 10 insects was Ronald Hawthorne, economic entomologist, Bureau of Entomology.

The 10 most important crop pests in California in 1958 were: corn earworm, lygus bugs, grasshoppers, peach twig borer, loopers, two-spotted spider mite, codling moth, citrus red mite, spotted alfalfa aphid and grape leaf folder.

The list was compiled from data submitted to USDA by county agricultural commissioners, field representatives of the Bureau of Entomology, employees of the U.S. Forest Service, range and experiment station employees of the University of California and industry groups. Corn earworm retained its number one position, with \$7,426,661 estimated as its damage to crops and cost of control in 1958.

In 1957, the spotted alfalfa aphid was in second place with \$9,704,627 total losses for damage and control measures attributed to it, but in 1958 it dropped to ninth place with a total of \$1,694,064 estimated as the total money lost to growers for its control and loss of crop.

The reason for the drop, according to Mr. Hawthorne, is that in 1958 biological control measures achieved a semi-balance for a large part of the year. Several species of ladybird beetles, introduced hymenopterous parasites and entomophagous fungi were very effective in reducing total ladybug numbers and bringing about an accompanying reduction in total crop losses.

Costing growers \$6,611,188, lygus bugs were the second most damaging insect reported by California producers in 1958. Lygus bugs were in third place in 1957 with total damage to crops estimated at \$3,083,764. Lygus bugs were reported as showing resistance to certain control materials in some San Joaquin Valley areas.

Grasshoppers were in third place in 1958 and were blamed for total losses of \$4,836,133 as compared to total losses of \$1,704,977 reported in 1957.

Mr. Hawthorne said that losses from grasshoppers were not as serious as expected in 1958 because late range retained green vegetation in the foothills until early summer and the movement of the pests into cultivated areas was not so great.

Peach twig borer retained its fourth place although Mr. Hawthorne's report shows that control measures increased nearly \$1 million.

Loopers as a group moved from sixth place in 1957 to fifth place in 1958, with approximately the same total cost as in 1957.

New additions to the list in 1958 are grape leaf folder and two-spotted spider mites, replacing red scale and San Jose scale.

In the forest insect group the western pine beetle was considered the number one pest of pine trees. Timber killed by the beetle was estimated to have a stumpage value of between \$4 and \$8 million. Mountain pine beetle was second on the list of pine insects.

The list of animal pests was not complete, but cattle lice were first, with tabanids and hornflies second and third.

Emulsol Chemical Merges Into Witco

NEW YORK—Witco Chemical Co., Inc., announces the merger of Emulsol Chemical Corp., Chicago—a Witco subsidiary—with Witco's organic chemicals division.

A major purpose of the move is to widen distribution of Emulsol products through the use of the parent company's extensive sales force, Witco said. The Emulsol sales staff will be absorbed into the Witco organization. A. O. Raven, formerly Emulsol sales manager, has been appointed products manager of the Emulsol products line.

Mississippi Group Approves Fertilizer Freight Rate Hike

JACKSON, MISS.—A new freight rate for rail shipment of fertilizer affecting shipments weighing between 30 and 40 tons and going to points within the state has been approved by the public service commission. Mississippi Chemical Corp. of Yazoo City proposed the rate. Under previous rates, shipments weighing more than 30 tons were shipped under the 50-ton rate.

A proposal made by the Southern Freight Assn. seeking to increase the rate for 30 and 50-ton shipments and suggesting a 40-ton rate only slightly under the 50-ton rate was turned down by the commission.

Texaco Names R. C. Creasy To Petrochemical Post

NEW YORK—Rudolph C. Creasy has been appointed Texaco's petrochemical sales representative to fertilizer manufacturers and other users of ammonia and nitrogen solutions in Missouri, Kansas, and Arkansas.

His headquarters are at the Texas Co.'s central region sales office in the McCormick Building, Chicago.

Mr. Creasy was born in Columbia, Mo., and was graduated from the University of Missouri with a B.S. in agriculture. Before joining Texaco, he sold agricultural chemicals and insecticides for the Chemagro Corp. He also supervised a fertilizer mixing plant in Missouri.

African Firm Seeks U.S. Funds for Plant Building

MOZAMBIQUE—The Produtos Agricolas Limitada firm in Mozambique, Portuguese East Africa, is seeking American private capital investment and technical assistance for the establishment and operation of an insecticide plant.

The firm recently set up a subsidiary organization known as Produtos Organicos Limitada which operates an insecticide mixing and blending plant in Lorenzo Marques.

The firm would like to expand its activities to include the manufacture of a wide range of agricultural chemicals and insecticides.

Brush Control Expert Resigns from Station

SPUR, TEXAS—One of the pioneers in brush eradication work, Cecil H. Meadors, is resigning his position with the Spur Experiment Station to accept a position with a farm chemical firm.

Mr. Meadors has for the last ten years worked almost constantly in developing methods to eradicate worthless brush from Texas rangelands. Along with others at the station he helped develop chemical treatment which gives a good degree of control for five to ten years at a moderate cost.

He conducted experiments in many parts of West and South Texas, not only with mesquite but with cactus, shinnery oak, Johnson grass and noxious weeds.

Mr. Meadors is also the author of many popular and scientific articles in agricultural publications.



ATTENDING the Yakima Fertilizer Dealers Meeting were: (left to right, top picture) Scott Hanson, program chairman, Collier Carbon & Chemical Corp.; B. R. Bertramson, soil testing panel moderator, Washington State University; Emil Nelson, principal soil fertility speaker, irrigation experiment station, and Leon S. Jackson, executive secretary, Pacific Northwest Plant Food Assn. The bottom photo shows the soil testing panel which includes (left to right): A. R. Halvorson, soil testing specialist, Washington State University; Grant Braun, American Potash Institute; John Keene, Yakima County extension agent; B. R. Bertramson, panel moderator, Washington State University; Sid Martin, Yakima Valley Spray; John Thomas, Simplot Soil Builders; Merle Switzer, TVA agronomist, and C. B. Harston, extension soils specialist.

'Better Use of More Fertilizer' Is Theme Of Washington Fertilizer Dealer Meeting

YAKIMA, WASH.—"Better Use of More Fertilizer" was the theme of the Central Washington fertilizer dealers day in Yakima recently.

Emil Nelson, soil scientist, irrigation experiment station at Prosser, keyed the theme of the meeting by presenting facts and figures on fertilizer recommendations for the irrigated crops. Of particular interest were his studies on total plant nutrient removal at different fertility levels.

"It might take us a long time to run low on available potash if we only use 50 lb. of actual nitrogen an acre on corn, but when we start using 200 lb. nitrogen and 100 lb. phosphate to get top yields we really start pulling heavy on soil potash," Mr. Nelson stated. He discussed the total removal of nitrogen, phosphate and potash of some important irrigated crops under various levels of nutrition.

F. Todd Tremblay, northwest regional director for the National Plant Food Institute, presented some of the results of the Washington Five-Acre Corn Contest.

"The contest has done a good deal to stimulate interest in higher yields per acre and use of good management to grow more corn at less cost per bushel," he said. "The economics of producing corn in the irrigated section of Washington at the present time indicate that corn acreage may double this season. The average fertilizer usage by the contestants was about 160 lb. of actual nitrogen and 80 lb. of phosphate an acre. In many cases, 6 to 8 lb. actual zinc was applied to remedy this nutrient deficiency."

Dr. A. R. Halvorson, soil testing specialist from Washington State University, discussed the college soil testing program and emphasized the

methods of analysis used at W.S.U.

"We are constantly correlating the methods we use against field trials put out by our research staff," he said. "So far we have been very pleased with the accuracy of these correlations, but we will continue to check the various crops."

Dr. Billy Bond discussed the use of bulk blending of fertilizers in today's modern fertilizer plants.

The highlight of the day's program was the soil testing panel moderated by Dr. B. R. Bertramson of Washington State University. A lively discussion on the theme, "Does Soil Testing Really Sell Fertilizer?" indicated that this was undoubtedly true. The consensus was that fertilizer dealers would be wise to join forces with the county agents to push the soil testing program in all areas.

Proctor Gull, R. L. Balser In New Spencer Posts

KANSAS CITY—Spencer Chemical Co. has shifted two members of its agricultural chemicals division, Proctor Gull and R. L. Balser, to new positions.

Mr. Gull, formerly manager of agronomy and market development, has moved to the company's research and development division to become manager of new agricultural product development. He is presently working with the development of a number of new pesticides, particularly "S-847" which has shown promise in the control of wild oats.

Mr. Balser, formerly a senior agronomist for Spencer, has become manager of sales promotion, agricultural chemicals. His responsibilities include planning and coordinating promotion of the company's agricultural nitrogen products.

Plant Food Group Starts Soil Test Project in Oregon

PORTLAND, ORE.—The Pacific Northwest Plant Food Assn. announced the start of an Oregon Centennial soil testing project.

Objective of the project, according to Leon S. Jackson, executive secretary of the association, is to determine the approximate nutrient status on the Centennial farms in western Oregon, to promote the need for soil testing and promote the use of mixed fertilizer.

The project is being carried on jointly between the association, the National Plant Food Institute and Oregon State College.

There are about 327 Centennial farms in the state which have registered with the Historical Society, Mr. Jackson said. Qualifications are that the farm must have remained in the same family and have been farmed for the past 100 years.

Because of these restrictions, the farms are not likely the oldest or the most rundown in the state, Mr. Jackson said, but it is assumed that under a cropping program of 100 years, the nutrient status of these soils is fairly low unless a good fertility program has been in effect.

Two samples per farm on 125 Centennial farms constitute the soil sampling phase of the project. These will be collected from 14 different counties by the local county agent. Upon completion of the soil sampling and testing, the material will be summarized for distribution, Mr. Jackson concluded.

R. H. Farmer in New Smith-Douglass Post

NORFOLK, VA.—R. H. Farmer, vice president and general manager of Texas City Chemicals, Inc., a wholly-owned subsidiary of Smith-Douglass Co., Inc., has been selected general manager of production for the company's chemical division with headquarters in Norfolk. He will be replaced as general manager of Texas City Chemicals by Herman G. Powers, presently assistant fertilizer division production manager.

U.S. Steel Appoints Loren R. Johnson to Staff

PITTSBURGH—The appointment of Loren R. Johnson to the market development staff of U.S. Steel Corp. was announced by the company.

Mr. Johnson will headquarter in the Pittsburgh office and will have the midwestern states among his primary responsibilities.

He was formerly with the Spencer Chemical Co. He graduated from the University of Nebraska with a master's degree in agronomy.

Wilson & Geo. Meyer Names Advertising Head

SAN FRANCISCO—John C. Flemer has been appointed advertising manager of Wilson & Geo. Meyer & Co. here. The position has been newly created as a result of expanding business, a spokesman said.

Prior to taking on his new responsibilities, Mr. Flemer was associated with National Lead Co., New York, in a sales promotion and merchandising capacity.

Educated in San Francisco schools, he was graduated from San Francisco State College in 1944.

BOOKLET PUBLISHED

GAINESVILLE, FLA.—The 1958 Florida Insect Pest Summary has been published. R. E. Woodruff, Florida entomologist, prepared the 34-page illustrated summary.

Fertilizer 'Significantly' Increases Cotton Yields, Arkansas Tests Show

FAYETTEVILLE, ARK.—Fertilizer significantly increased cotton yields at six locations tested by the University of Arkansas' Agricultural Experiment Station.

Tests were conducted in 1958 in cooperation with local farmers and county extension agents in these counties: Craighead, Crittenden, Lincoln, St. Francis and two tests in Woodruff.

Richard Maples and Dr. J. L. Keogh, with the Eastern Arkansas Soil Testing and Research Laboratory at Marianna, were in charge of the tests.

The researchers observed these general trends from the tests:

- Nitrogen alone increased yields in four of the five tests in which response to nitrogen was determined.

- Phosphorus applied at the rate of 60 lb. an acre increased yields significantly at one test in Woodruff County. This experiment was designed to determine response of cotton to varying rates and combinations of phosphate and potash only. This soil tested medium in phosphorus.

- Phosphorus and potassium, in combination with nitrogen, gave higher yields than nitrogen alone in five of the tests.

- Highest yields occurred where nitrogen was applied at the rate of approximately 60 lb. an acre on coarse and medium textured soils.

- Greatest degree of earliness, as indicated by yield at first picking, generally resulted from the fertilizer treatments that produced highest total yields.

- Applications of 90 to 120 lb. nitrogen an acre tended to delay maturity and increase vegetative growth on medium and coarse textured soils, the agronomists reported.

Ten Monsanto Directors Reelected at Annual Meeting

ST. LOUIS—Ten members of Monsanto Chemical Co.'s board of directors were reelected at the company's 57th annual meeting of shareowners.

Francis J. Curtis of St. Louis, who will reach retirement age during April, and Thomas H. Barton of El Dorado, Ark., for reasons of health and age, did not stand for reelection to the board.

Board members who were reelected are: Edgar M. Queeny, St. Louis, chairman; Charles Allen Thomas, St. Louis; Charles S. Cheston, Philadelphia; Frederick M. Eaton, New York; John L. Gillis, St. Louis; Carroll A. Hochwalt, St. Louis; Herbert Hoover, Jr., Los Angeles; Trueman M. Martin, El Dorado; William W. Schneider, St. Louis, and Felix N. Williams, St. Louis.

Of the company's 22,251,651 outstanding shares of common stock, 80% were represented in person or by proxy at the meeting.

Davison Insecticide Gets Experimental Label

BALTIMORE—Preparations for testing on a wide scale of a new type insecticide for greenhouse use are being made by W. R. Grace & Co. Davison Chemical Division.

Permission has been given by the U.S. Department of Agriculture for experimental label registration of Dri-Die Horticultural Dust 91. This new product is related to, but different in formula from, Dri-Die Insecticide 67, for which permanent registration has been granted to Davison.

Dri-Die Horticultural Dust 91 will not be available for general use until further tests have made permanent registration possible.

New Mexico Firm To Build New Plant

ALBUQUERQUE, N.M.—Ravel Brothers of Albuquerque will complete in June a \$250,000 feed and fertilizer manufacturing plant to serve the farmers of the Rio Grande Valley.

The fertilizer mill will have a 50-ton per day capacity, with room for expansion. It will be the first in New Mexico to produce single superphosphate.

The mill also will be equipped to produce agricultural and garden fertilizer mixes.

This is not the first venture into fertilizer milling for Ravel Bros. The firm's Ironized Plant-Gro has been made at its present plant for 11 years and will continue as the company's main fertilizer product.

Ground for the plant was broken last week. Louis Ravel, chairman of Ravel's board, said that the feed mill will produce hog, dairy and poultry rations.

The fertilizer plant will occupy about 5,000 square feet of floor space. Materials will be placed and removed by a mobile conveyor system. Another conveyor will run from the mill to open acreage where fertilizer materials will be stored for curing prior to processing.

There also will be two tanks for storage of liquid fertilizer. Room has been allowed for the addition of from six to eight additional tanks.

Ravel Bros. will distribute the fertilizer statewide through dealer organizations.

The firm began business in Columbus, N.M., in 1910, and now has five stores, four in Albuquerque and one in Belen, N.M. Officers of Ravel Bros. are: Arthur Ravel, president; Allan Ravel, vice president, and Ira Ravel, secretary-treasurer. Louis Ravel, board chairman, joined the firm in 1911, and Arthur Ravel began in 1913.

Meeting Dates Set

WASHINGTON—The 87th annual meeting of the Manufacturing Chemists' Assn. will be held June 11-13 at the Greenbrier in White Sulphur Springs, W.Va.

John L. Gillis, vice president of Monsanto Chemical Co., is program chairman.

More than 700 chemical industry executives attended the 1958 meeting.

ACQUIRES COMPANY

POMEROY, WASH.—The Pomeroy branch of the Columbia Farm Supply of this city was recently acquired by the Pacific Supply Cooperatives, announces Charles Baker, Walla Walla, general manager of this association. The transaction became effective Feb. 1 and Mr. Baker said Pacific Supply Cooperatives will offer area farmers a complete line of farm chemicals and liquid and dry fertilizers. Pacific Cooperatives now has over 60 liquid fertilizer outlets and is reported to be the largest fertilizer distributor in Oregon, Washington and Idaho. Some new equipment including more applicators of a larger and modern design will be added to the equipment now in service at the location.

CORN CHAMP

DAWSONVILLE, GA.—A 15-year-old Dawsonville, Ga. high school boy has won the 1958 state Future Farmer of America corn production contest by producing nearly six times the amount of corn the average corn grower produced. The state average per acre yield in 1958 was 32 bu. Bobby Kinnard of Dawsonville gathered 180 bu. from his acre of corn. In making his high record he first took a soil sample and planted Georgia 101 variety. He used 300 lb. of 4-12-12.

the audience.



Dr. Dale E. Butz

JOINS STAFF—Dr. Dale E. Butz, associate professor of agricultural economics at Michigan State University and now on sabbatical leave, has joined the staff of Illinois Farm Supply Co., announced C. H. Becker, the firm's general manager. Dr. Butz will be the agricultural economist for the firm and will be a member of the executive management committee. He is currently engaged in a research project for the Harvard graduate school of business administration.

Row Fumigation Seen As Aid for Cantaloupes

CLEMSON, S.C.—A Clemson College agricultural scientist at the Edisto experiment station says that pre-planting applications of liquid soil fumigants in the row greatly increased the yield of marketable cantaloupes in experimental plantings at that station in 1956-57-58.

Dr. D. F. Cohoon says that ethylene dibromide, D-D and dibromochloropropane all effectively controlled root-knot nematodes and resulted in doubling or tripling the yield over the untreated checks on a light sandy soil highly infested with root-knot nematodes.

Rohm & Haas Announces Price Drop on Miticide

PHILADELPHIA—Rohm & Haas Co. announces a reduction of prices for its Kelthane W miticide. According to the company, the reduction amounts to about 14% less than the 1958 price schedule.

The reduction was possible because of expanded production, the company said.

The miticide is for use in controlling the European red, clover, two-spotted, yellow, McDaniel, apple rust, peach silver and Willamette mites.

Cyanamid International Adds Development Assistant

NEW YORK—Neal E. Shafer has joined Cyanamid International, agricultural chemicals division, as assistant director development, announced Wilbur H. Miller, technical director.

Mr. Shafer was formerly an assistant professor in the agriculture college at the University of Nebraska.

While at the university he was in charge of a special research project in agricultural aviation.

SOUTH CAROLINA SALES

CLEMSON, S.C.—Fertilizer sales in South Carolina during February, 1959, amounted to 87,345 tons, compared with 55,527 tons for February a year ago, reported B. D. Cloaninger, director of the fertilizer inspection and analysis department, Clemson College. The state increased its fertilizer use by some 40% for the six months ending Feb. 28, 1959, as compared with the same period the previous year.

Research—Top Step in Firm's Sales Ladder

By JESS BLAIR
Croplife Special Writer

The Wood Chemical Co. of Lubbock, Texas, has become one of the biggest sellers of fertilizer and insecticides in west Texas for several reasons. Perhaps the two most important are their research programs and their work with irrigation farmers.

The company has been carrying on several experiments all during the growing season. These range from nematode control projects to fertilizer plots. Last year they cooperated with a gibberellic acid manufacturing firm by applying the new chemical to a field of irrigated cotton. Where the proper amount of acid was used, the yield was a half bale an acre more than the untreated portion of the field. Many more such tests are scheduled for this year.

"These tests naturally cost money," said Donald Johnson, chemist for the company. "But all agriculture is in a state of change. New products are coming out monthly, and we try to stay abreast of them."

One way to really know what new products will do under field conditions is to test them there. In order to pay for these experiments, the company must sell a large volume of chemicals.

They not only deal directly with farmers in a wide radius of Lubbock, but have dealers in many west Texas and New Mexico towns. In addition to the plant at Lubbock, they also have mixing plants at Brownfield, Morton and Uvalde, Texas, and one at Artesia, N.M. By putting their plants out in the cotton growing areas, they can save on freight and give growers quicker and more efficient service.

Wood Chemical has all fertilizer mixed to specifications by a fertilizer manufacturing company at Levelland, Texas, and sells it under the name of Woodgrow. This is shipped from the factory to all the Wood distributors. The insecticides are mixed at the four plants and sent to dealers throughout the area. All in-

secticides are labeled with the Wood-kill brand.

In working the various experiments Wood Chemical contacts leading farmers and tries to set up the test plots on their farms. If possible, these tests are made on main roads and are easily accessible to the public.

All tests are supervised by the company's field men who are well-trained in fertilizers and insecticides. When the tests prove profitable, they are publicized. If not profitable, then the experiments go on until good results are achieved.

"During the summer no farmer is far from one of our representatives," said Mr. Johnson. "They visit farmers and work closely with dealers. If a new product comes out that seems worthy, these men will introduce it to dealers and try to get some producer to try it on a small scale."

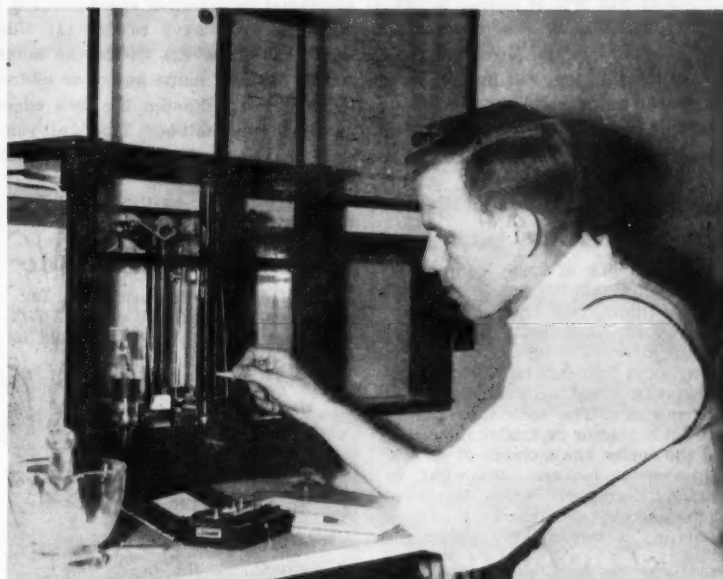
After the insects start building up, the company's entomologists seem to be everywhere. They contact county agents, make field trips, hold field demonstrations and are busy plotting the course of the infestation. They are also selling a lot of Wood insecticides to farmers and crop dusters.

"The starting point for many of these experiments is right here in our own laboratory," said Mr. Johnson. "We are equipped to do everything from making soil tests to checking chemicals for potency. And I might add that every batch of insecticides mixed is tested in the lab. Every carload sold must meet our specifications."

The young chemist personally makes all the soil tests. The samples are taken by field men, or occasionally some farmer will bring in his own soil sample. However it arrives at the lab, the company makes the analysis free of charge.

"We also try to educate the grower in the use of fertilizers," said Mr. Johnson. "Soil tests are good indicators, but we tell the farmer to watch

(Turn to SALES LADDER, page 14)



DONALD JOHNSON, chemist for Wood Chemical Co., Lubbock, Texas, is shown in his laboratory where he is weighing a pesticide dust to be certain it is up to standard. Every mix of fertilizer and insecticides is tested minutely in the laboratory. Quite often Wood Chemical tries out new products which are also laboratory tested.

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor

Every farm store should put into chart form its total sales, expenses, gross profit, department sales (such as feed, farm chemicals, etc.), department profits and comparison sales by months. This recommendation comes from the owners of the Farm & Garden Center, Inc., Opelousas, La.

This firm has been maintaining sales and profit charts since 1952-53 (July 31 is the end of the firm's fiscal year). "It's the best way for managers to get an over-all picture of the farm store's operation and a simple device for spotting trends," says Andrew Dossmann, Jr., secretary-treasurer.

Charles Prescott, president, concurs with his partner, Mr. Dossmann. "We're firmly convinced of charting our business progress. Some truly startling facts have been uncovered after studying our charts," he adds.

"For example, we have been able to pick up low-profit lines and either promote them more or drop them," Mr. Prescott states.

Adds Mr. Dossmann:

"Charts demonstrate effectively that 11-12% gross profit on field seeds is definitely not enough for dealers. Big volume doesn't mean a big profit. A dealer can lose money by doing a big volume of business. Charts help to pick out this weakness. We emphasize better-margin items because we believe less risk and more profits result.

"We believe in checking our sales daily and comparing them with year-ago figures. In this way the job of preparing our monthly and year-end charts is simplified considerably.

"We have found that it is necessary for us to get 9% gross profit on field fertilizer and we will not cut our prices below a figure that will leave us less than 9%. It's our belief that a dealer selling fertilizer for a gross profit of 3% to 9% and carrying the customer on the books for several

months is not good business. On field seeds, a gross profit of 15-20% is desirable, although in some situations a dealer will settle for a 10% margin. Likewise, a 5% gross margin on farm chemicals is not enough profit for the dealer, in our opinion."

The two partners have other specific merchandising ideas that are successful for the Farm & Garden Center.

"Three percent of total sales is spent on advertising. We could probably go to 4% to 5% profitably," says Mr. Dossmann. "About one-half of the advertising budget is spent in the Opelousas daily newspaper and the remainder mostly for radio advertising. Spot announcements and a five-times-daily weather report cost us \$52 a month. The regular spots are timed to coincide with peak selling seasons.

"The advertising budget is determined this way: Sales for the coming month are estimated. We then plan to spend about 3% of the estimated sales. The money is spent almost en-

(Turn to SHOP TALK, page 14)

5 Rules Guide Salesman Using 'Convincing Contrast' Method

By H. E. Carroll
Croplife Special Writer

When a customer hesitates to buy something from you, it is natural for him to weigh the advantages of buying against the disadvantages of buying.

Every dollar your customer spends with you means some type of sacrifice he must make. If he buys a new sprayer from you, he cannot buy something else he may think he wants more.

Some salesmen only present the reasons for buying at the close of the sale. They feel that the positive attitude is best and do not mention any negative thoughts at the close.

At first glance, this seems like good sales logic. It keeps the sale on a positive plane. But, it overlooks a fundamental rule of successful selling: Get your customer's viewpoint.

Your customer is thinking of rea-

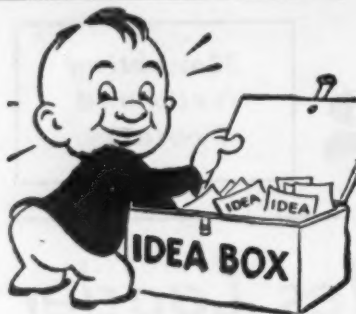
sons why he should not buy. He is mentally weighing his pre-conceived ideas against your reasons for buying. And, because his reasons are hidden, you do not know what obstacles you need to overcome.

● Rule 1 for closing with a convincing contrast: Do not fear your customer's reasons for not buying.

By spending five minutes in sales thinking, you can probably list the most common reasons your customer has for not buying. With this knowledge you can easily develop and present counter arguments in your regular sales talk.

These arguments may or may not completely convince your customer he should buy. If they do, closing is easy. If they don't, you have a golden opportunity to use the close-by-con-

(Turn to 5 RULES, page 14)



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 6889—1959 Sprayer Line

The 1959 line of spray equipment, with additional improvements and simplifications, has been announced by Century Engineering Corp. The "A-2" sprayer will be standard with 6-row boom that can be converted to 8-row with a set of extensions, the company said. The basic unit can be used on a tractor or trailer mounting and the dealer has a choice of pumps. Improvement features, according to company literature, include increased boom height adjustment, improved regulator, a self locking chain for



height adjustment, a regulator stand which places the regulator close to the operator and more factory assembly. Complete details are available by

checking No. 6889 on the coupon and mailing to this publication.

No. 6890—Applicator

Gustafson Manufacturing Co., Inc., announces the addition of the CS-G model for chemical band treatment to

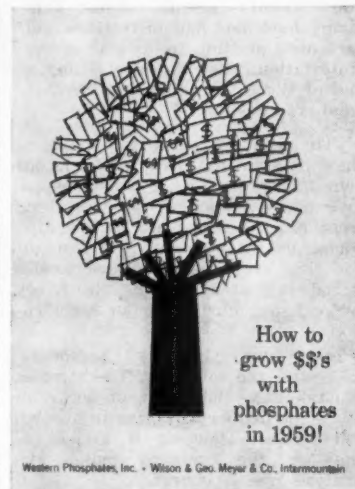


the company's line of Chem-Soil Mixers. The model was developed, company literature says, for the application of fungicide to control Southern blight in peanuts, but it also may be used for dust and granular insecticides, herbicides and dry fertilizer materials. The unit is easily mounted on the tool bar of most tractors and planters, the company says, together with a chemical distributor to apply and mix the chemical simultaneously with planting. The distributor meters the chemical over a 10 in. band cen-

tered on the furrow. A double gang of rotary hoes serves to mix the chemical with the soil to a proper depth, the company says. Check No. 6890 and mail for details.

No. 6892—Fertilizer Promotion Kit

A dealer promotion kit containing sample sales aids for Anchor phosphate fertilizers has been announced by Wilson and Geo. Meyer & Co., Inc. Included in the kit are Anchor "Crop Quiz" pads, dealer ad proofs, a broadside for store display, an illustrated information booklet and a counter display containing free literature. The



broadside has an attached dealer reply card. Details are available by checking No. 6892 on the coupon and mailing to this publication.

Also Available

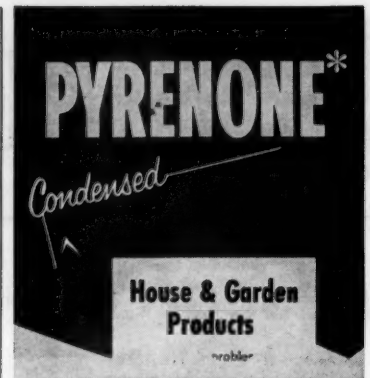
The following items have appeared in the What's New section of recent issues of *CropLife*. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 6886—Cotton Insecticide Folder

A folder describing the use of Sevin insecticide on cotton is now available from Union Carbide Chemicals Co., division of Union Carbide Corp. The features of the insecticide are explained in the folder, the company says, as well as a listing of insects on which it is effective. The folder is in color and is illustrated with photos of a number of different insects. Check No. 6886 on the coupon and mail for a copy.

No. 6887—Formulation List

Formulations aimed at increasing effectiveness of household, garden



and truck crop insecticides against resistant insects are included in a folder being offered by Fairfield Chemicals, Food & Machinery and Chemical Corp. The folder lists suggested formulations for dual purpose home and garden sprays, horticulture sprays, fungicide additives, emulsifiable garden sprays and concentrates and garden and truck crop dusts. Also included are model front and back package labels with accepted wordage for declaration of contents and directions for use. Check No. 6887 on the coupon and mail for details.

No. 6883—Quack Grass Movie

Agricultural losses to quack grass and the control of this weed grass are explained in a motion picture produced by the Dow Chemical Co. Entitled "Quack Grass, the Perennial Guest," the film likens quack grass to a burglar who has become a guest by being allowed to remain in farm fields. In sequences filmed in the field, the picture shows the control of this grass in various crops with pre-plant, post harvest or in-crop applications of Dowpon. The film is available for free bookings. Check No. 6883 on the coupon and mail to this publication.

No. 6888—Insecticide Applicator

An applicator for soil insecticides has been announced by Noble Manufacturing Co. According to company literature, the unit's main element is a 50 lb. capacity hopper that fits all planters, listers or seeders, with one hopper for every two or three rows being worked. The hopper is powered by the drive shaft of the planter.



Flexible steel drop tubes in the hopper bottom direct the granules into proper position for effective killing. The machine has universal mounting, the company says, and by means of a split drive sprocket can be attached to the planter's drive shaft without removing the shaft. A calibrated metering dial gives the operator positive control of application rate. Details are available by checking No. 6888 on the coupon and mailing.

No. 6885—Pelleted Brush Control

"Dybar," a pelleted formulation of fenuron for control of woody brush, has been introduced by E. I. du Pont de Nemours & Co. When the pellets are scattered over brush-infested areas, the company says, they give positive brush control with one treatment. The pellets are nonvolatile and

Send me information on the items marked:

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| <input type="checkbox"/> No. 6882—Fertilizer Spreaders | <input type="checkbox"/> No. 6889—1959 Sprayer Line |
| <input type="checkbox"/> No. 6883—Quack Grass Movie | <input type="checkbox"/> No. 6890—Applicator |
| <input type="checkbox"/> No. 6884—Aerosol Insect Sprayer | <input type="checkbox"/> No. 6892 Fertilizer Promotion Kit |
| <input type="checkbox"/> No. 6885—Pelleted Brush Control | <input type="checkbox"/> No. 7402—Bulletin on Motor Starters |
| <input type="checkbox"/> No. 6886—Cotton Insecticide Folder | <input type="checkbox"/> No. 7406—Laboratory Service Data |
| <input type="checkbox"/> No. 6887—Formulation List | <input type="checkbox"/> No. 7408—Air Delivery Feeder |
| <input type="checkbox"/> No. 6888—Insecticide Applicator | |

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can be used near sensitive crops, are noncorrosive, nonflammable and present no toxicity hazard to people or animals when used as directed, the company says. The $\frac{1}{2}$ in. cylindrical pellets are applied just as they come from the package. They can be scattered by hand, applied with a table-spoon at the base of individual stems or clusters, applied with mechanical broadcaster or spread by airplane. Complete information can be obtained by checking No. 6885 on the coupon and mailing to this publication.

No. 6882—Fertilizer Spreaders

The Ezee-Flow division of Avco Distributing Corp. announced the availability of its 1959 line of fertilizer spreaders. Spreader models 120D (illustrated), 100D and 88D, of 12 ft., 10 ft. and 8 ft. widths, feature a patented removable cam agitator



that can be lifted out of the hopper for easy cleaning, the company said. The cam agitator grinds, mixes, levels and forces fertilizer out port openings through positive camming action, the company said. The agitators are case-hardened to crush the hardest fertilizer lumps. Complete product and soil test kit information can be obtained by checking No. 6882 on the coupon and mailing.

No. 6884—Aerosol Insect Sprayer

A new model of the Bes-Kil aerosol insect sprayer has been announced by Besler Corp. The model is skid-mounted and without a tank, but otherwise is identical to the trailer mounted models, the company says. The Bes-Kil is an adaption of the



smoke screen machine used by the U.S. Navy in World War II, the company says, and tests show it is effective for killing flies, mosquitoes and other insects. A feature of the machine, according to company literature, is that it applies the insecticide outside of the machine, so that the chemical does not lose potency by being overheated. It can also be used as a wet-spray machine, with a spray

boom or by hand. Check No. 6884 on the coupon and mail for details.

No. 7402—Bulletin on Motor Starters

The advantages of centralizing motor starters in control panels are discussed in a 4-page technical bulletin offered by the Richardson Scale Co. Bulletin 58-C cites initial costs, wiring, engineering time and maintenance costs savings that result from mounting the starter centers in control panels at the time the panel is constructed, the company said. Six photographs of motor starter centers mounted in Richardson control panels at various plants illustrate the bulletin. For copies, check No. 7402 on the coupon and mail.

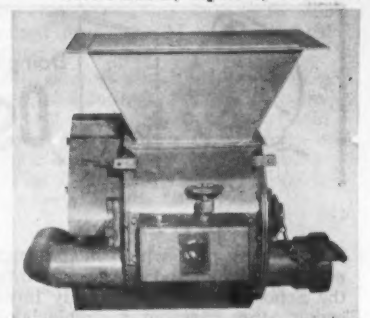
No. 7406—Laboratory Service Data

The University of Wisconsin Alumni Research Foundation has announced

the availability of a new brochure and a series of leaflets describing the various laboratory services the group offers to industries. Included among the services discussed are nutrition, chemistry, animal studies, toxicity testing, microbiology, insecticide testing and food technology. The brochure is fully illustrated, showing the various phases of laboratory research in actual photos. The individual leaflets discuss the specific service in detail. For information on how to receive this data, check No. 7406 on the coupon and mail.

No. 7408—Air Delivery Feeder

Ripco Air Systems has introduced the Ripco truck conversion kit for flexible air hose delivery of granular material. With the kit, the company says, dealers and suppliers can convert present rolling stock, either flat bed or dump style, to an air delivery



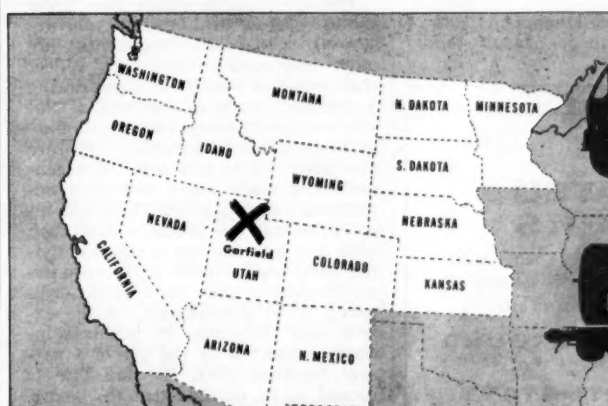
system. Simplicity of installation is one of the unit's features, the company says. The feeder installed at the rear of the truck bed is hydraulically driven, eliminating the need for long power take off shafts and flexible drives. On flat bed trucks, the feeder can be used as a bag to bulk delivery, or gravity fed from a dump style body. More information is available. Check No. 7408 and mail for details.

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anywhere in the West...

your shipment gets there
FAST when you order
ANCHOR phosphates!

Your customers get the fast service they like when you order *Anchor* for their phosphate needs. Western Phosphates' centrally located plant at Garfield, Utah, and network of in-transit warehouses assure prompt delivery to Western growers.

For full information, call any office of Wilson & Geo. Meyer & Co., Inter-mountain, sales agent for these 7 Anchor products. They will expedite your order.



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Doing Business With

Oscar & Pat



By AL P. NELSON

A delivery man with pencil thrust between his cap and ear walked into the Schoenfeld & McGillicuddy farm supply store carrying a sizable bundle.

He approached plump, ulcerish Tillie Mason, the bookkeeper, placed the wrapped bundle on the edge of her desk and said, "Mimeographing for Schoenfeld & McGillicuddy. Sign for it?"

Casually he took the pencil from his cap and handed it to Tillie. She was about to sign the receipt, when Oscar called out, "Just a minute. What is this?"

The deliveryman looked surprised. "It's mimeographing from Fedrick & Fedrick," he said.

"I didn't order it," Oscar said truculently. "Ach, let me haf a look at it."

He came over and took a look at the bundle. A soil sample sheet was taped to the front.

Oscar's lips tightened as he read. "Ach, more mimeographing! Always we have so much printed matter. The closet is full of it. Some we send out. Some we don't. What does it bring us? Only bills."

"Mister," said the deliveryman, "will you please sign this delivery receipt? I've got lots of places to go this morning. I'm on a schedule."

Oscar paid no attention. "You wouldnt think that all we hadt to do is sendt in orders so these here printers can make a livink. Ach, I haf never heardt of such foolishness. Andt then we shouldt go out and help the farmer take soil samples. Yah, and then maybe he goes and buys his fertilizer someplace else."

"A modern farm supply store today must do things like this for farmers to build good will," Tillie said. "You never know where you might get some extra customers."

"We got too many that ain't no goot now," Oscar snapped. "They don't pay their bills. Himmel, will that Irisher ever learn to do something besides spendt money?"

"Mister," said the deliveryman, his eyes narrowing, "will you sign this delivery receipt? I'm late now."

"It is time we start cuttink down aroundt here," Oscar said. "I am surprised we are not bankrupt a long time ago. Always we must do so many things for the farmer to make him happy and feel nice to us. Bah, first thing you know we will be putting sugar in his coffee and maybe even changing his baby's diapers. I haf

never heardt such foolishness as dealers nowadays talk. Let the farmer come in and buy and not expect too much service from the dealer. We have a hardt enough time gettink them to pay for what they buy. Why shouldt we go farther in the hole by taking free soil samples for them?"

The deliveryman coughed. "Are you gonna sign this receipt or not?" he asked loudly.

"Ach, I am not. Take your schtuff back and don't ever bring any of that junk aroundt here again. We can get along without it."

"Well, why the heck didn't you say so in the first place instead of wasting my time while you yammered?" growled the deliveryman. He grabbed the bundle and started for the door.

Just at this moment Pat McGillicuddy came in. He saw the bundle, read the headline of the soil sample sheet.

"That's ours," he said. "I'm glad it's here."

The deliveryman's eyes glowered with anger. "He won't accept it!" he snapped, pointing at Oscar. "He got out of bed on the wrong side this morning or somethin'."

"I did not!" protested Oscar angrily. "Ach, I get out of bed on the same sidt every day at the same time, too. And I'll bet a loafer like you has to be kicked outt by your wife."

Pat took the delivery receipt. "I'll sign it," he said calmly, "and then I'll explain to my partner."

He signed the paper and handed it to the fuming deliveryman. The fellow left, with a withering glance at Oscar.

"Oscar," said Pat slowly, "why do you have to question everything I buy?"

"To keep us from going broke, that's why!" snapped his white faced partner. "Soil testing! You chust ran a soil test campaign last fall. And now another one! Himmel, are you crazy?"

Pat shook his head. "I don't think so. Listen, Oscar, when we push soil sampling, that doesn't cost us anything except for a little mimeographing. Farmers need to have their soil tested. There are many left who didn't respond to the fall campaign. But they'll all need fertilizer now, and we need a method to contact them."

"Let them come here when they want fertilizer."

"Some will. Some won't. Through this soil test deal, I am going to visit every farmer who didn't get his soil tested last fall. I'll hand him one of these mimeographed sheets telling

him how he can still test his soil for spring. And that I'll help him if he wishes. That gives me an in to start talking fertilizer requirements to him, too."

"Ach, I'll bet none of them are goot pay. We won't collect if you do sell them."

Pat went on amiably. "I'm also putting up a large cardboard Honor Roll of customers who have had their soil tested," he said. "Nora and I are making it and all this firm needs to pay for is the cardboard. But every farmer who comes

in will consult that list of names. He will want to be on it."

"You spendt so much time cookin' up ideas to sell more and you spendt money like wildfire on printing and advertising," Oscar fumed. "Why don't you go outt and collect once in a while?"

"I will. I will! Soon as I get some free time."

Oscar choked. "Free time! Get to work on time in the morning, and you'll have time enough to collect. Don't schtay two hours for lunch at the Chamber of Commerce meeting. Don't visit so long with farmers you meet. Time—you got more than I got."

Pat's face whitened a little. "Listen, Oscar, you got your way of doing business, and I got mine."

Pat turned to Tillie. "It's a little early for coffee," he said sharply. "But I'm going out for a cup, before I blow my top. Ye Gods, what a partner I'm trapped with!"

Consider 'Natural' Fiscal Date For Closing Out Year's Business

EDITOR'S NOTE: This article is based on information furnished by the Ohio Society of Certified Public Accountants, 79 E. State St., Columbus, Ohio.

Is Dec. 31 the best date for your farm store to wind up its business affairs? Would Jan. 31 be better? Or Nov. 30?

Statistics published by the Internal Revenue Service show that about 75% of new corporations, filing income tax returns for the first time, do so on a natural (fiscal) year basis. Unless your firm's natural business year and the calendar year are one and the same, you too may want to consider using a fiscal or natural business year.

Generally, the spring and summer months are the busy seasons for farm stores. These months would not be suitable for closing the books in many instances. For many farm stores, however, Dec. 31 is not a good cut-off period either. Inventory-taking and the holidays complicate the job. It may be that a late fall month might work out best, even though your store uses the Dec. 31 closing and you have "always done it that way."

A "fiscal" year is a period of 12 months which ends at the close of some month other than December; actually a company's fiscal year should be, and generally is, its natural business year. The natural business year of your company is that period of 12 months which ends when business activities have reached their lowest point in the annual cycle.

The advantages which flow from the use of a natural business year are several. Financial statements are more informative since they reflect the results of policies in force during a complete cycle of operations. Not only are the financial statements likely to be more informative, they are also prepared at less cost, as a general rule, since fewer arbitrary adjustments are required. Then, too, inventories can be taken at less cost, with less interruption of usual activities and, undoubtedly, with more accurate results since they would ordinarily be at a minimum. To the extent that distortion of business income is avoided by the use of a natural business year, the tax bite is spread more evenly over the years, too. These are merely a few reasons why use of the natural business year has increased. Any busy executive who has faced a year-end closing at a time when his business activities were not at their lowest will be able to add additional reasons of his own to justify the use of a natural business year.

There was once a time when businessmen could chart their course without reckoning with the Commis-

sioner of Internal Revenue. (Would that we could today.) Now, however, your silent partner in Washington may be concerned with any plans you may have for the use of a natural business year.

A new corporation may choose any accounting period for its first tax return; while the first tax return may cover a period of less than 12 months from the date the corporation was organized, it may not, of course, report a period in excess of 12 months. However, even though the corporation's taxable year has been established, it may be changed without prior approval of the Commissioner of Internal Revenue if:

- (1) its accounting period has not been changed during the last 10 years;
- (2) it does not have a net operating loss for the "short period" between the end of its established year and the beginning of the new fiscal year;
- (3) its income for the "short period," when annualized, is at least 80% of its income for the preceding taxable year, and
- (4) its "special status," if it has one, is the same for the "short period" as for the preceding taxable year. (Personal holding companies, foreign personal holding companies, exempt organizations, foreign corporations not doing business in the U.S., western hemisphere trade corporations, and China Trade Act corporations have "special status.")

All four requirements must be met and a statement to the effect that the requirements have been met must be submitted with the corporation's return for the short period.

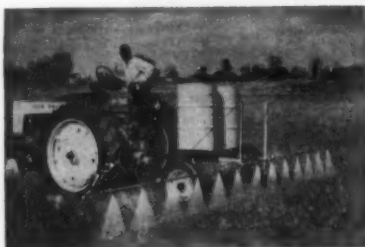
If your business is operated as a partnership, you may find that your partnership tax year must generally coincide with the taxable year of your principal partners. However, if you can provide sound business reasons to support the use of a different fiscal year, the Internal Revenue Service may give you permission to change your partnership year.

An individual conducting his business as a proprietorship may report his income on a fiscal year basis. Prior approval of the commissioner is required, however, before changing to a fiscal year or from one fiscal year to another.

An accounting expert in your community is qualified to explain further details of the natural business year. In addition, he can explain more fully the procedures necessary to change your program. Perhaps on Dec. 31, 1959 you can plan to spend New Year's Eve at home—without thinking about the annual inventory count.

this year can be your best with

CLOVER'S DEHYDRATED LIQUID FERTILIZERS



increased yields—better quality crops—earlier maturity for top price use:

FERTI-GROUND
for ground application and pastures

FERTI-START
for transplanting

FERTI-FOLIAGE
for leaf feeding

FERTI-LIQUID
the all-purpose liquid fertilizer

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FARM SERVICE DATA

Extension Station Reports

New "borated" fertilizers have set the stage for western Oregon farmers to apply badly-needed boron for some of the area's key crops, reports the Oregon State College agricultural experiment station.

More than 80% of OSC soil samples from southern Oregon and 90% from the Willamette Valley show need for boron to get best production of forage legume crops. Boron shortage has not yet been established in the coastal areas.

Beets, carrots, broccoli, and cauliflower require adequate boron for good market quality, reports T. L. Jackson, OSC soil scientist. Apples, pears and walnuts also need added boron on most Willamette Valley soils.

Cost of using this minor element is low since only small application rates are needed. For example, 2 lb. an acre "actual" boron is a good application for legume crops, Mr. Jackson explains. One pound an acre a year will maintain boron levels for apples and pears in the Willamette Valley.

Big problem in the past has been lack of a satisfactory method of applying such small rates. Fertilizer dealers now have such materials as borated gypsum and borated mixed fertilizers for easy application.

Water soluble boron fertilizers are also available and can be applied with spray equipment or through irrigation sprinkler systems.

County extension agents can supply farmers with OSC fertilizer recommendations showing amounts of boron to use and time of application for specific crops. Tree fruits and forage crops, especially, have been neglected in the past Mr. Jackson states. He adds that boron is also important for legume seed production.

Spring or fall applications of commercial fertilizer are usually of about equal effect, fertilizer dealers learned at a recent series of Idaho meetings. The time doesn't make much difference. The kind and amount do.

Charles Painter, soils specialist of the University of Idaho extension service and chairman of the discussions, said research shows Idaho soils need nitrogen and phosphorus as the main elements for fertility balance. In some areas there is need for potash, zinc, iron, boron, sulfur, and molybdenum. Soil tests and field trials are the key in determining the need.

It was pointed out that placement of fertilizers by banding is proving no more effective than the broadcast method. The important thing, dealers learned, is that the fertilizer be worked into the seed-bed.

The dealers expressed need for changes in state law to specify what constitutes a fertilizer in contrast to a soil conditioner. They learned that inspectors of the state department of agriculture will check more closely in the field this year for labeling and analysis. New equipment is in use for analyzing liquid fertilizers along with dry carriers.

Speakers told the dealers that carriers have changed in the last 20 years almost entirely from organic to inorganic because of developments in synthetic plant-nutrient carriers.

Advances in forest fertilization were described. Researchers said marked response in tree growth has

been observed in tests. The effect on timber grading is yet to be determined.

Experts offered recommendations for financing and bulk handling fertilizer.

University of California trials in various Sacramento Valley areas during the past season show phosphate placed under tomato seeds at planting may solve problems of slow growth of seedling or purple leaves indicating a phosphate shortage.

Care must be exercised, however, the university researchers state, to avoid too close placement of fertilizer. Otherwise, improper irrigation may be detrimental.

Ten to 20 lb. of nitrogen and 25 lb. of phosphate an acre is recommended with 60 or more pounds of nitrogen side dressed later in the season.

Two chemicals tested by the botany and entomology department at New Mexico State University have proved generally effective in controlling nematodes in cotton.

Reporting on the effectiveness of Nemagon S-1 and Dowfume W-85 was Dr. J. Gordon Watts, head of the botany and entomology department. The two chemicals were tested by the department in 1958. Conducting the research was Donald J. Morton, former assistant nematologist with the department.

Dr. Watts said the chemicals are effective when applied as liquid with chisel injection equipment about 12 in. deep in listed beds. Nemagon was also used in a granular application at the time of listing with almost equally good results. The chemical gave nearly perfect control of the root knot disease when applied in the pre-plant irrigation water.

Treatment of plots of cotton which were heavily infested with nematodes resulted in yield increases as high as 156% over untreated plots, Dr. Watts said.

Nemagon is safe on many growing plants which makes post emergence applications possible. Some crops such as onions and potatoes are highly sensitive to Nemagon, however, and should not receive post emergence treatment, Dr. Watts said. Sensitivity of the crop to Nemagon should be considered before making application, he added.

Two other compounds, Dorlone and Telone, also gave very good results in one experiment. These compounds are usually applied to the soil before planting.

Further information on the results of this research can be obtained from the botany and entomology department at New Mexico State University, according to Dr. Watts.

The California Long-White Potato Advisory Board has awarded \$10,000 to vegetable crops scientists at the University of California, Riverside.

The money will support studies of soil fertility problems connected with potato growing, with emphasis on southern California conditions.

Oscar Lorenz, vice chairman of the department of vegetable crops, says the investigation will have three objectives:

(1) To learn exact fertilizer needs of potatoes and establish the most efficient rates of application.

(2) To assess soil and plant analy-

sis as a means of determining nutrient needs.

(3) To determine the relationship of any factors associated with black spot, a serious potato disease.

Kent B. Tyler, associate olericulturist, will work with Mr. Lorenz on the fertility studies.

Fertilization is vital to efficient potato production, says the Citrus Experiment Station scientist. It can raise per-acre production from about 20 sacks to between 300 and 400 sacks.

Evidence is growing that lack of calcium is the cause of a destructive rot in tomatoes that particularly affects the San Marzano variety in California—a variety important to the processing industry for sauces, pastes, and other uses.

Arthur R. Spurr, associate professor of vegetable crops at the University of California, Davis, says recently completed studies of the anatomy of the disorder—blossom-end rot—point to calcium deficiency as the basic cause.

"These findings substantiate the results of earlier studies on different aspects of the disorder that also implicated calcium deficiency as the cause," Mr. Spurr says.

Mr. Spurr points out that blossom-end rot has been reported in many countries. Serious losses—up to 75% in some Florida fields—have been caused by the disorder.

Blossom-end rot usually appears first from 10 to 15 days after full flower. The disorder may show itself through dark discolorations on the skin of the fruit, or deep-seated rot within the tomato, or both.

Mr. Spurr notes that such factors as lack of water, excess soluble salts in soil, an imbalance of nutrients, or combinations of these, all of which can influence calcium nutrition, are thought to affect blossom-end rot; but their exact roles in the disorder are not known.

Corrective treatments were not included in Mr. Spurr's work. Other authorities point out, however, that treating plants with calcium sprays will sometimes alleviate blossom-end rot.

Soil samples taken inaccurately may cause the chemical recommendations to be misleading, according to W. F. Bennett, soil chemist with the Texas extension service. He says that

field depressions, old fence lines and unusual areas should be avoided in getting a composite sample.

Soil samples should be taken to a depth of 6 in. and be scattered over the field. From 10 to 15 individual samples should then be put into a sample box and mailed to the laboratory at College Station or taken to the county agent's office.

There is probably no other soil improvement practice that will return more profit per acre and per dollar invested than applying limestone in areas where it is needed, says Bill Bennett, extension soil chemist at Texas A&M College:

"Limestone should be the first investment in a soil fertility program," Mr. Bennett said. "Lime deficiency results in a loss through decreased production and inefficient fertilizer use."

He pointed out that soil test summaries made by Texas A&M College revealed that over 75% of east Texas soils tested were less than pH 6.5. Soils with a level of less than 6.5 generally need limestone for good plant growth.

"Lime performs several functions in the soil," Mr. Bennett explained. "It supplies calcium for plant use, reduces soil acidity, increases desirable bacterial activity and makes other plant nutrients more available. All of this means a more profitable crop yield and this is the important thing to the farmer."

Mr. Bennett advises getting a soil test and using it as a basis for limestone application because this is the only way to accurately determine requirements.

New Farm Store Started

TAHOKA, TEXAS—Dale Thuren, owner of the Dale Thuren Farm Store here, has established a second store at O'Donnel, about 20 miles south of Tahoka.

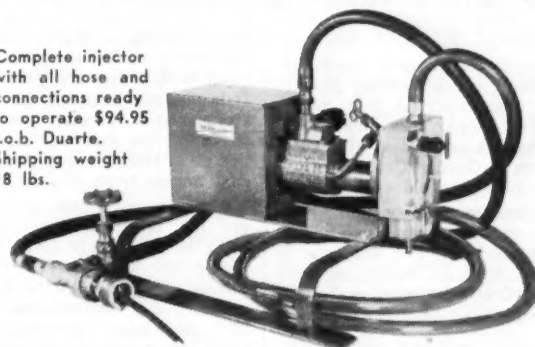
The new store will handle a full line of feeds, insecticides, fertilizers and other farm products. At present the store is operated by only one employee.

APPLICATION FIRM

DENVER, COLO.—R. H. and N. R. Herndon and C. M. Furrer have incorporated Normair, Inc., 801 Depew St., Denver, to engage in the business of application of insecticides, fungicides, herbicides or other agricultural chemicals.

FERTILIZER INJECTOR

Complete injector with all hose and connections ready to operate \$94.95 f.o.b. Duarte. Shipping weight 18 lbs.



The injection of Liquid Fertilizer in sprinkler irrigation systems is made easy with the Arcadia Injector. Only one 3/4" pipe opening is needed to connect the injector. Irrigation water pressure operates the system 35 to 150 P.S.I. recommended. Fertilizer capacity 1 to 45 gals. per hour. Corrosive material has no effect on the working parts of the injector.

Arcadia Pump
MANUFACTURING COMPANY

2142 CENTRAL AVE.

DUARTE, CALIFORNIA

5 RULES

(Continued from page 9)

trast method to button up the sale.

● Rule 2 for closing with a convincing contrast: Bring out typical reasons for not buying first.

When you frankly admit the disadvantages first, the customer sees you as a buying counselor rather than as a high-pressure salesman. You have an excellent opportunity to minimize his reasons for not buying.

For instance, you might say: "You will have to spend a little money for this." The soft pedal key word in this is "little." It minimizes the price and is a subtle compliment to your customer's financial standing.

● Rule 3 for closing with a convincing contrast: Soft pedal your customer's reasons for not buying.

Your customer may have a hidden reason for not buying. It may be something new—something not typical. Before you can proceed successfully with the close of the sale, you will want to know all of your customer's reasons for not buying.

Here is a selling technique used to smoke out any hidden reasons for not buying:

After you have given all the typical reasons for not buying, you ask your customer: "Can you think of any other good reasons for not buying?"

The key word in this question is "good." Your customer will bring out his real reasons, but will quickly realize his excuses are not "good" reasons. With this question you have smoked out any real hidden reasons your customer may have for hesitating to buy. You have erased the danger of an excuse for not buying coming up later.

● Rule 4 for closing with a convincing contrast: Smoke out all the

other good reasons your customer may have for not buying.

Now that you have on one side reasons for not buying, you need to start on the other side. This is where you build up valid advantages for buying.

Naturally, you will want your advantages to outweigh the disadvantages. If you are using notes to list the advantages and disadvantages, you will want a longer list for the positive side than for the negative side. Some salesmen use their fingers to enumerate the reasons and call off the number of each one presented. This makes it easy for the customer to keep track of the contrast between the advantages and the disadvantages.

Another device used by successful salesmen using the contrast method of closing is to add an adjective to the reasons for buying. For instance, a salesman might say: "You will find this sprayer most economical." The word "most" helps tip the scales in favor of buying when all the reasons have been presented to the customer.

● Rule 5 for closing with convincing contrast: Build up the reasons for buying to overshadow the negative reasons.

Finally, you will want to nail down this contrast close.

Some dealers phrase the closing question this way:

"Which are more important to you, the reasons for not buying or all the reasons for buying?"

This type of question will spotlight reasons for buying and show the customer how they outweigh reasons for not buying.

SHOP TALK

(Continued from page 9)

tirely to advertise merchandise in season.

"Proper timing is absolutely necessary for outstanding ad results. The weather can hurt results badly in our area, especially with advertising of crop chemicals. We have lots of rain here and a rain at the wrong time cuts down ad pull," says Mr. Dossmann.

The firm carries its record-keeping principle into other areas. Seed is pre-packaged and displayed, bearing a price mark to encourage self-service. An exact record is kept of all pre-packaged seed sales. It was found that mustard and turnip seeds have become the top sellers. As a result, these two items get added promotional efforts.

Two employees spend much of every January pre-packaging garden seeds and price-marking each package. The two employees—along with the two owners—comprise the staff of the Farm & Garden Center which, in 1957-58, had total sales of \$62,000.

No product is sold without first asking the customer what use he intends to make of it. For example, if a chemical dust is requested, the problem is first discussed and then the proper application method is suggested.

"Timeliness in displays is just as important as timeliness in advertising," explains Mr. Dossmann. "An annual spring insecticide display is one of the most profitable ones. It is always labeled something like this: 'It's time to . . .' We believe that a display should provide an idea or suggest action to the prospective customer."

The Opelousas store has little bad credit difficulty because, as Mr. Doss-

mann puts it, "we don't want to hang onto trade by doing a big credit business. We don't allow credit at all on farm supplies, only on garden and lawn supplies. Thirty days is the same as cash and we bill monthly."

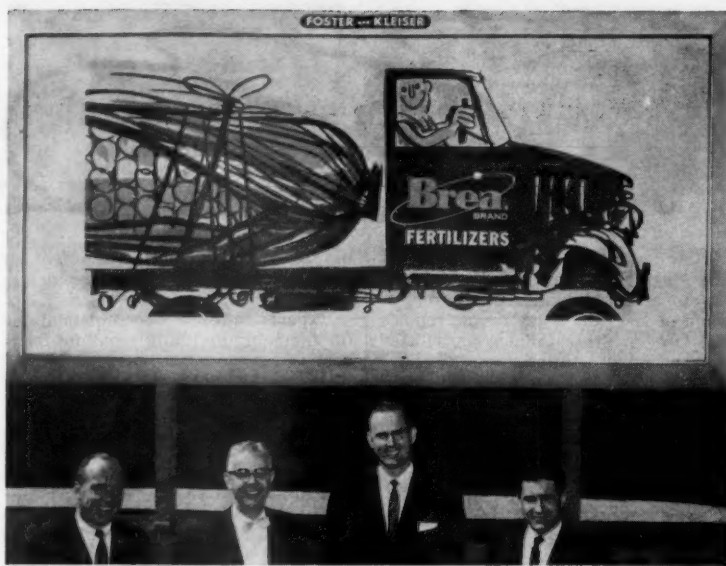
A step-saver installed recently is an intercommunications system. The partners can issue instructions from the 40 by 60-ft. retail sales room to the two employees who may be in the adjoining warehouse (40 by 40 ft.) or in the nearby nursery area and potting shed.

There is one main reason why the Farm & Garden Center owners—faced with an expanding suburban population—decided on the present location at West Landry St., on the edge of Opelousas. One-way streets (which form highway 190) enable customers to drive up to the store from both front and rear entrances. It is planned to make the rear of the store into a "second front," since it backs on the one-way street leaving the city. This feature gives the store easy access from two sides.

Mr. Prescott and Mr. Dossmann are not only business-minded, they don't neglect their civic responsibilities either. Currently Mr. Prescott is a member of the Opelousas city council. The city, incidentally, has had a 30% population growth in the last eight years and is now at 15,600.

PEANUT CHAMP

ATHENS, GA.—A Sumter County peanut grower has become the third man in the history of the Georgia Ton-Per-Acre Peanut Club to receive a gold key for growing a ton or more of peanuts per acre for five years. J. Frank McGill, extension agronomist of the University of Georgia college of agriculture, said that Hubert Parker was recently recognized for his fine production practices at the ninth annual meeting of the club.



FOR THEIR FIRST use of outdoor advertising to promote Brea brand fertilizers, the Collier Carbon and Chemical Corp. has bypassed copy to let the poster design tell the story of a bumper crop. The novel design is featured in a six-months posting program with Foster and Kleiser Division W. R. Grace & Co., to provide coverage in areas of high agricultural output throughout California, Arizona, Washington and Oregon. On hand to set the Brea program rolling were (left to right): Lee K. Whittles, Foster and Kleiser account executive; Jack Heath, advertising manager of Collier Carbon and Chemical Corp.; Robert Brandon, account supervisor, and Howard Borschell, account executive, both of Charles Bowes Advertising, Inc., who handled arrangements for the Brea campaign.

Fertilizer Helps Make Desert Area Bloom

BROWNFIELD, TEXAS—In rising from a semi-desert dryland farming area to one that produced over 120,000 bales of cotton in 1958, Terry County can attribute its prosperity to three things—irrigation water, deep breaking and fertilizer. Together these three have lifted it from an almost worthless farming county to one of the state's best in just a few years.

Farm chemical sales in the county have been growing steadily during the last six years and the industry now employs 200 people in the peak seasons. Fertilizer was first tried on a trial basis about 1952, and has increased rapidly in use each year since.

The Farm Chemical Co. here applied fertilizer to 300 acres in 1953, but last year treated over 11,000 acres. Others estimate that the total amount of fertilizer used last year amounted to over 25,000 tons.

A similar story can be told about insecticides. One manager of a farm chemical company says that area farmers spent more than \$500,000 for insecticides last year.

In addition to several firms selling fertilizers and insecticides, three crop dusting companies are now located here. One new fertilizer plant was recently built in Brownfield while another one is being planned.

The rapid growth of agricultural production has also been reflected in the population increase, which has almost doubled since 1950.

Dry Summer Fears Prompt Irrigation Plans in Texas

TAHOKA, TEXAS—As a dry summer looms ahead, farmers are once again turning to irrigation wells. Many wells were pumped very little in 1958, but the moisture of last autumn disappeared during a rainless winter.

Not only are farmers irrigating land now, but there has been a great increase in water well drilling. Many of these wells will be used to supplement a diminishing water supply. At present there are an estimated 42,000 irrigation wells on the High Plains of West Texas. This number will likely be increased by 1,000 before the year ends.

As the race for higher yields continues, farmers are also turning more to fertilizers. Dealers report heavy sales in some areas, with the trend being toward higher analysis materials.

SALES LADDER

(Continued from page 9)

his crop and be on the lookout for certain deficiencies that may not show up in the soil test. Our field men instruct them on how to determine the need for more potash, nitrogen and phosphorus."

Although the regular tests are for these three elements, the company is also doing some work with trace elements, and will have more such plots this year.

The Wood Chemical employs about 10 men during the winter months, but may double this during the growing season. The biggest rush is during July and August when boll worms, cabbage loopers and other cotton feeders are at their peak. During that period the company is not only shipping out large quantities of insecticides, but many other sales are made to farmers who come to the plant.

The company delivers all materials free of hauling charges. If the grower comes to Lubbock after his fertilizer or insecticides, he receives a discount equal to the amount of the hauling charge.

"This looks like a lot of services to give the grower," Mr. Johnson said, "and it costs money. Yet the products are not sold at cut-rate prices. The company gets a legitimate profit on all sales, and is able to offset these costly services by selling a large volume of goods. During the year our products may go to thousands of farmers in Texas and New Mexico."

Because the company has accumulated so much knowledge of the area and its needs, farmers have come to rely upon the firm's recommendations. The dealers are likewise trained in such problems and are taking a leading role in irrigation farming wherever they are located. They have thus been able to gradually increase the amount of fertilizer used on cotton and vegetables. Partly through their influence, producers who once used 200 lb. an acre are now using even greater amounts.

"No one can really sell fertilizer without knowing what's in the sack and what it will do," said the young chemist. "The only way to learn this is to take it to the field, put in on a crop and then check the results. That's what our company does, and is one main reason why it has been expanding its facilities and increasing sales every year."

Trade Winds From California

FRESNO, CAL.—Donald N. Vinyard and Reed W. Rushton are principal owners in the newly incorporated Ranch-Aero, Inc., a crop dusting firm in Fresno.

MORGAN HILL, CAL.—The Strawberry Institute Nursery has been formed at Morgan Hill in the Santa Clara Valley to grow and test strawberries.

FRESNO, CAL.—Seed and fertilizers are being sold by the newly formed Clover Leaf Agri-Supply Co., founded at 5246 South Peach St., Fresno. Jonas C. Price is principal owner of the firm.

DALY CITY, CAL.—Skyline Garden Supply, Inc., retailer of farm chemicals and related goods, has closed its doors and sold all of its stock.

BUTTONWILLOW, CAL.—Vince Dusters and Vince Crop Dusters have been unified in a move whereby Vincent V. and Winifred O. Bittleston have sold the former to the latter, a corporation.

COLUSA, CAL.—The Wiggins Mineral Co. has been formed at Colusa with stock valued at half a million dollars. Darrel E. Pierce and Sally L. Brooks of Sacramento are directors of the firm.

CARMICHAEL, CAL.—Gunther's Nursery is the name of a new retail store owned by Robert A. Gunther, and opened at 4700 Fair Oaks Blvd., Carmichael, center of a developing home and garden owning area.

VISALIA, CAL.—John R. and Lena E. Salsa are rightfully proud of their new farm and garden supply store, opened recently at Giddings and Walnut Ave., Visalia. They call the retail establishment Salsa Pride.

LAFAYETTE, CAL.—Douglas Feehey has sold the Bob Kenney's Fertilizer Co., Buckeye Ranch at Springhill Rd., Lafayette, to Keith Duarte.

WATSONVILLE, CAL.—The Leso Seed and Chemical Co., Inc., has been formed in Watsonville with a capitalization of \$100,000. Principal owners include Lewis W. Lettunich, George Saulovich, and James L. MacLellan.

COALINGA, CAL.—James A. Wallace is principal owner of the Coal-inga Brand Gypsum Co. opened at Coalinga recently.

ORLAND, CAL.—A new garden and farm supply store at Orland is operated under the name of its owners, Irene J. and Norvall W. Schroeder. The couple retails farm chemicals and related supplies.

SUNNYVALE, CAL.—A garden and farm supply store has been opened in Sunnyvale by Thomas M. Hayano at 12655 North Highway 9.

WATSONVILLE, CAL.—Ralph C. and Lois J. Nichols are owners of a new garden and farm supply store opened recently at Pajaro.

SAN MATEO, CAL.—The Garden-

mart Corp. has been organized here to retail farm and garden chemicals and related supplies, with a capitalization of \$25,000. Directors of the firm include Grayson W. Hinckley, Robert S. Hinckley, and Grayson Hinckley, Jr.

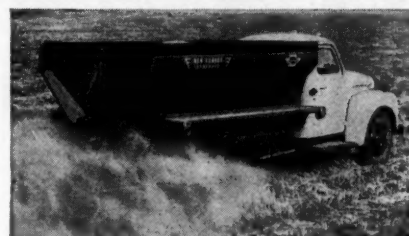
LEMOORE, CAL.—The Machado

Flying Service, a crop dusting firm, has been sold by its founder and owner for several years, I. R. Machado, to Al LeFleur. Headquarters of the firm are on Hanford-Armona Rd., near 18th Ave., Lemoore.

CHICO, CAL.—Farmers Chemical and Fertilizer Co., 2420 Park Ave., Chico, has been purchased by the

California Spray-Chemical Corp., Richmond. Two other branch plants located at Biggs and Yuba City have also been sold by the former owners.

LINCOLN, CAL.—The Lincoln Nursery has been formed to retail agricultural chemicals and other supplies at East Ave., near 4th Street in Lincoln. Owner is Ollie P. Simmons.



NEW LEADER Model L-14S LIME SPREADER

is a high quality rig with a low price tag!

Cut your in-the-field costs with this simple to operate, easy to maintain spreader. Merely set the feedgate opening, start the truck, engage the PTO and start spreading! Material is delivered to the twin spinners over a wide 24" conveyor. Also available with a center dump for stock piling and windrowing.

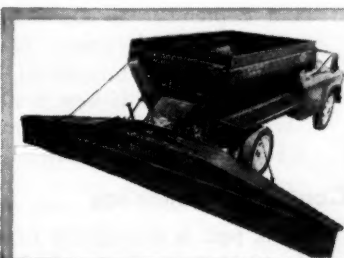
NEW LEADER Engine-driven Spreaders: Model L-52S with 24" conveyor is built for widespread use. Model L-62S with a 30" conveyor is for extra heavy, widespread lime applications. Both spreaders can also be used for fertilizer.

Accurately Blends and Spreads Three Fertilizers At The Same Time!

Now, offer mixed analyses at low, bulk rates!

Three separate feedgates, each with a test box for accurate metering, control the amount of spread. The driver can change the fertilizer ratio for varying soil conditions while in the field! Now, you can spread 3 kinds of fertilizer in one pass through the field... whereas, before it took 3 separate trips to do the job! A 7 h.p. gasoline engine drives the twin spinners at a constant rate, regardless of truck speed. The 36" belt-over-chain conveyor is powered from a drive-shaft drive synchronized to truck speed... for precise per-acre requirements. Optional equipment meters herbicides and insecticides into the fertilizer... spreads all three at once.

A Powered Flow-Divider assures even distribution of materials to both spinners, regardless of the position of the L-42S on hillsides or level ground. Customers appreciate this feature as it results in an even crop growth throughout the field.



Model L-19S Combination Spreader With PTO Drive, 24" Conveyor and Twin Spinners Delivers Fast, Uniform Spreads!

Simple operation saves time and upkeep. Just set the feedgate opening... start the truck engine... engage the PTO... start spreading! The body has 45° angle sides to prevent bridging—heavily reinforced to stop warp and twist—extended 6" higher to hold bigger payloads with less blowing.

NEW LEADER Engine-driven Combination Spreaders are also available: Model L-22S with a 7.0 h.p. engine and Model L-32S with a 12.5 h.p. engine to deliver plenty of power for heavy applications of lime or fertilizer.

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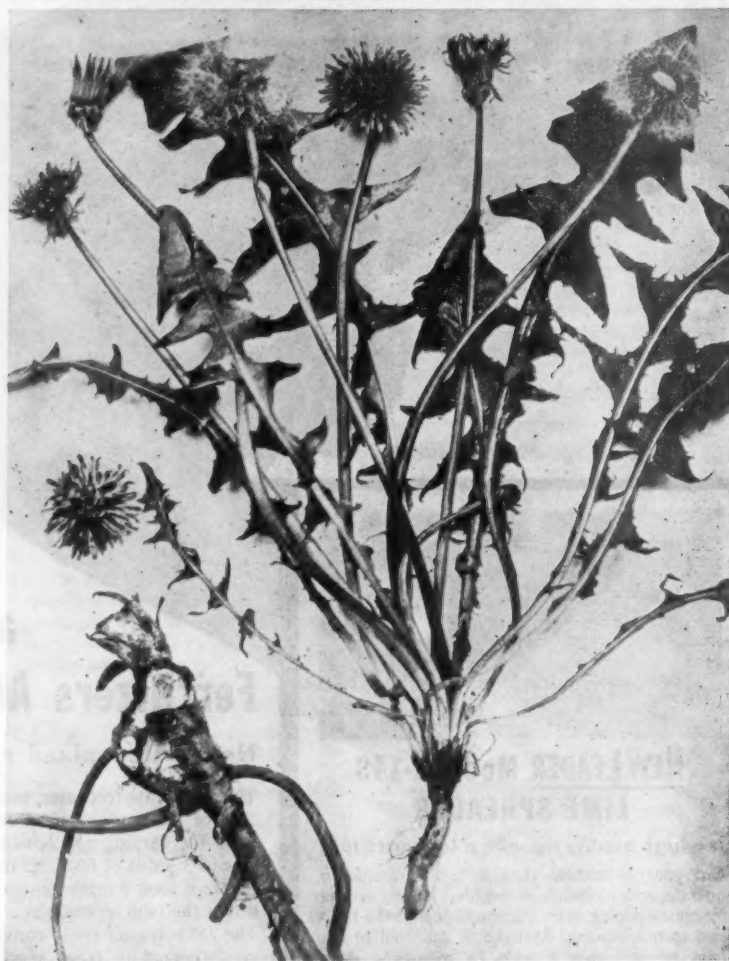
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WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board



Dandelion

(*Taraxacum officinale*)

How to Identify

If ever there was a weed with which nearly everyone is acquainted, dandelion should get the vote. The familiar yellow-flowered plant found in lawns, meadows, gardens, roadsides, and waste places is probably the most hated lawn weed of all. The plant consists of a rosette from a taproot and a flower stalk bearing a single head. Leaves are alternate, simple, variously lobed, forming a rosette at the surface of the ground.

Habits of Dandelion

The plant is a perennial, reproducing by seeds. It flowers and seeds March-June,

and September to December, in some portions of the country in all months. Dandelion was introduced in the U.S. about 1870 and is now well distributed throughout the states, although with less frequency in the southwest.

Control of Dandelion

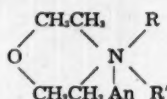
This pest is susceptible to a number of herbicidal chemicals which are successful in controlling it. Cultural means of control include application of fertilizer to the lawn to invigorate the grass which will tend to crowd out the weeds. The plant food should be applied in April and again in September.

Illustration of Dandelion through courtesy of U.S. Department of Agriculture.

Industry Patents and Trademarks

2,879,199

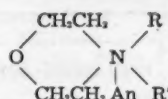
Nematocide. Patent issued March 24, 1959, to Milton Kosmin and Van R. Gaertner, Dayton, Ohio, assigns to Monsanto Chemical Co., St. Louis, Mo. The method of controlling nematodes which comprises exposing said nematodes to a toxic quantity of a nematocidal composition comprising as the essential active ingredient a quaternary morpholinium salt of the formula



where An is the anion of a strong acid, R is a lower alkyl radical, and R' is a tridecylpolyoxyethylene residue derived by removal of the terminal hydroxyl group from the condensation product of ethylene oxide with a mixture of isomeric primary tridecyl alcohols, said alcohols being derived by the catalytic reaction of carbon monoxide and hydrogen with an olefin material selected from the class consisting of triisobutylene and tetrapropylene, said condensation product containing at least 5 moles and not in excess of 20 moles of ethylene oxide per mole of tridecyl alcohol.

A nematocidal composition comprising as the essential effective ingredient an aqueous solution of a

quaternary morpholinium salt of the formula



where An is the anion of a strong acid, R is a lower alkyl radical, and R' is a tridecylpolyoxyethylene residue derived by removal of the terminal hydroxyl group from the condensation product of ethylene oxide with a mixture of isomeric primary tridecyl alcohols, said alcohols being derived by the catalytic reaction of carbon monoxide and hydrogen with an olefin material selected from the class consisting of triisobutylene and tetrapropylene, said condensation product containing at least 5 moles and not in excess of 20 moles of ethylene oxide per mole of tridecyl alcohol.

2,879,150

Method of Destroying Undesired Grass. Patent issued March 24, 1959, to George F. Deebel, Dayton, Ohio, and Philip C. Hamm, Webster Grove, Mo., assigns to Monsanto Chemical Co., St. Louis. The method of destroying undesired plants which comprises applying to said plants a toxic quantity of a herbicidal composition comprising as the essential active ingredient a 5-n-alkyl-2,4,6-trichloropyrimidine having from 4 to 18 carbon atoms in the alkyl radical.

2,878,156

1, 1, 2-Trifluoroethylfluorosulfonate and Fumigation Process. Patent issued March 17, 1959, to Ralph A. Davis, Midland, Mich., assignor to the Dow Chemical Co., Midland, Mich. A process for combating pest organisms by fumigation, the step which comprises: contacting such organisms with vapors of 1,1,2-trifluoroethylfluorosulfonate.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

Agri-Phos, in capital letters, for superphosphates. Filed Jan. 9, 1958 by the American Agricultural Chemical Co., New York. First use March 12, 1957.

Dielmoth, in capital letters, for insecticide. Filed May 23, 1958 by Shell Chemical Corp., New York. First use April 14, 1958.

Design, diamond shape with the word Amchem in hand-drawn letters through the middle, for herbicides and other products. Filed May 28, 1958 by Amchem Products, Inc., Ambler, Pa. First use May 21, 1958.

Design, unusual shape with the words Patco's in script and Weedkill in outline block letters across the middle, for chemical for destroying noxious plant life. Filed July 30, 1958, by Lee Patten Seed Co., Jersey City, N.J. First use April 22, 1958.

Minnesota Sales

ST. PAUL, MINN.—Fertilizer sales in Minnesota during the six months ending Dec. 31, 1958, amounted to 126,987 tons compared with 72,153 tons sold during the similar period in 1957, reported the division of feed and fertilizer, Minnesota Department of Agriculture, Dairy and Food.

SALES IN NORTH CAROLINA

RALEIGH, N.C.—Fertilizer sales in North Carolina during the six months ended Dec. 31, 1958, amounted to 230,285 tons or 30,800 tons more than the similar period in 1957, reported L. Y. Ballentine, commissioner, North Carolina Department of Agriculture.

Gloomicides

My son who is a freshman in college had been pestering me for a late-model car. On a visit to the campus I pointed out that most of the cars in a parking lot were of ancient vintage.

"But, Dad," he protested, "those cars belong to the faculty!"

★

The much-married society beauty ran into some friends at a function. "Darlings," she cooed, "I have wonderful news! I am getting married next week."

"Really," came the reply. "Anyone you know?"

★

Mom suddenly had the urge to live in the past. She complained to her husband: "You used to kiss me," so he leaned over and kissed her on the cheek. "You used to hold my hand," she said, so he reached out and held her hand. "You used to bite me on the neck," added Mom, and Pop started to walk out of the room. "Where are you going?" asked Mom, and Pop replied: "To get my teeth."

★

A couple of young boys walked into the dentist's office and one faced boldly up to the dentist and said, "Doc, I want a tooth took out and I don't want no gas 'cause I'm in a hurry."

"My," said the doc, "I must say you're a brave boy. Which tooth is it?"

The little boy turned to his silent friend and said, "Show him your tooth, Albert."

★

"How much do I owe you for curing my deafness?"

"Twenty dollars."

"Did you say thirty dollars?"

"No, fifty dollars."

★

Big executive asked his steno: "Quick, quick, Myrtle, where's my pencil?" Steno: "It's right behind your ear, sir." B.E.: "Come, come, Myrtle, I'm busy, be explicit, which ear?"

★

The operator was about to close the doors of the crowded elevator when a tipsy gentleman pushed his way in. As the car started up he tried to turn around to face the door, but was wedged in so tightly that he couldn't move. The other passengers stared into his rather bleary eyes with growing embarrassment. Finally, when the strain became quite painful, the tipsy one cleared his throat and remarked, "I expect you are wondering why I called this meeting."

★

Two new inmates of a theatrical home were getting acquainted.

"My name is James Darlington," said one. "You remember me in films? I was a star in silent days."

"Indeed I do remember you," said the other. "And I'm Jack O'Farrell, the magician of O'Farrell & Hughes. You may have seen our act where I used to saw Miss Hughes in half?"

"Of course, of course!" said Darlington, "and a very good act it was. By the way, where is Miss Hughes now?"

"Oh," said the magician, "she's living in Boston and Kansas City."

Chemicals Effective In Nematode Control

STATE COLLEGE, N.M.—Nemagon S-1 and Dowfume W-85 have proved generally effective in controlling nematodes in cotton. Dr. J. Gordon Watts, head of the botany and entomology department at New Mexico State University, has reported. The two chemicals were tested by the department in 1958. Donald J. Morton, former assistant nematologist with the department, conducted the research.

Treatment of plots of cotton which were heavily infested with nematodes resulted in yield increases as high as 156% over untreated plots, Dr. Watts said.

INSECTS

(Continued from page 1)

operation with Florida, is currently saturating the natural screwworm population with male screwworm flies made sterile by exposure to radioactive cobalt. Female flies that mate with the released males lay infertile eggs.

Another cooperative effort between USDA and Florida, using an attractant-insecticide combination, resulted in eradication of the Mediterranean fruit fly in 1957.

Research now underway is expected to determine whether these two methods can be applied with comparable success to other important insect pests.

This summer, for example, small-scale field trials, such as those initially conducted on the island of Curacao to test male-fly irradiation for screwworm control, are being planned for certain tropical fruit flies on isolated islands in the Pacific.

One of these islands may also be used to test the effectiveness of attractant-insecticide combinations against male fruit flies. Experimental combinations now under study are designed to eliminate the male flies and thus eventually eradicate an entire population. In experiments in Hawaii, USDA entomologists achieved 70 to 90% control of one of the fruit flies by this method. The scientists believe complete success might be achieved in field tests on an isolated area.

In laboratory experiments at the Agricultural Research Center, Beltsville, Md., certain chemicals and drugs have been found to inhibit growth of ovaries in house flies. Since this would prevent egg production by the females, the method may have some promise of leading to a high degree of control, say the USDA researchers.

Meanwhile, use of chemical insecticides, insect parasites and predators, insect diseases, insect-resistant crops and elimination of insect breeding grounds are being further explored. These methods have helped to control many pests. They will continue to be important for insect control and will be expanded as new discoveries in these fields are made, according to USDA.

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PERU PLANT

(Continued from page 1)

ing discs. While this technique has been used by the European pharmaceutical and candy industries, it is the first time that it will be employed in the western hemisphere, Fertisa said.

Located ocean-side, the Callao installation will use sea water at the rate of 630,000 gal./hr. to cool the condensers of the thermo-electric power station built on the plant grounds. Based on a 330 day year, the plant will have the following capacity:

20,000 metric tons anhydrous ammonia; 54,000 metric tons nitric acid, 53% by weight; 35,000 metric tons ammonium nitrate—fertilizer and technical grades; 7,500 metric tons ammonium sulfate—fertilizer grade, and 1,500 metric tons nitric acid, 98% by weight.

Washington Soils Specialist Recounts Ups and Downs of Group's Sampling Plan

EDITOR'S NOTE: The accompanying article was adapted from a talk prepared by Dr. A. R. Halvorson, soils department, Washington State College.

PULLMAN, WASH.—The fertilizer industry, realizing the importance of soil testing, has through its regional organization, the Pacific Northwest Plant Food Assn., encouraged the use and wide acceptance of soil testing.

In 1957 the association sponsored a soil sampling program with fertilizer dealers. They said they would pay the fertilizer dealer \$1 for the first soil sample he had farmers in his area send in to the soil testing laboratory at the state college here.

At the beginning, the program was to be limited to five counties—King, Kittitas, Clark, Skagit and Grant. The laboratory was to set up a special book to record the number of samples which came in under this program.

As time went by and the record book remained almost empty, it appeared that the program had been a failure.

Facing this prospect the association began thinking of other ways to make the program work. They then hit upon the idea of offering the same incentive for soil sampling to vocational-agriculture students.

As a test, they tried it out in King County only. The county agent, Duane Weeks, was assigned to get the program going. He met with the vo-ag instructors and explained the program. A quota of 200 samples was allotted by the association for the county. Each Future Farmer of America chapter interested in the program was allotted a portion of the \$200.

Soon, many samples were coming into the laboratory and the record book began to fill up.

Out of the 200 samples for which payment had been allocated for the county, 178 came in.

This prompted the association to extend the program to the other four counties in the original group.

When it came time to sum up the results of the two programs a rather surprising fact came to light. It seems that the first program had not been a failure. As they were compiling the number of samples tested, it was noted that the proportion of samples coming in while the first program was under way was much higher than normal. It was then discovered that the dealers had been more interested in getting the soil tests than in getting the dollars. The farmers' samples had come in but the dealers hadn't bothered to ask for the money and consequently, it did not show up in the record book.

The dealers had been so enthused about the program that one had even hired a special worker to go out and help the farmers take the samples. Other dealers in the area had either helped the farmers take the soil samples or had packaged and paid mailing costs of the sample. Grant County alone had sent in more than 1,000 samples.

In the meantime, the vo-ag soil sampling program was so successful that the association wanted to continue and expand the program to include all vo-ag departments in the state. As an incentive for the FFA chapter to get soil samples sent in from their area, the association is now giving a soil sampling tube to the first 50 chapters that send in 10 or more samples.

Altogether, eight regional meetings have been held or will be held with vo-ag instructors to explain the program and the proper sampling procedures. The instructors in turn will use this information in teaching stu-

dents about sampling and soil fertility management.

In summing up, Dr. Halvorson said that this program will pay big dividends. First of all, he said, the farmers who use the program will be taking the guesswork out of their fertilizing. The students will learn modern soil technology by actual practice. Finally, the fertilizer dealer will be able to sell his goods with much greater assurance that it will meet the needs of his customers.

Agrico Announces Personnel Changes

NEW YORK—Continuing the reorganization brought about by Agrico's recent expansion and acquisitions, the American Agricultural Chemical Co. announces the following personnel changes:

D. L. LeCureux becomes branch manager at Saginaw, Mich. He was formerly assistant manager at Saginaw, and replaces W. L. Beales who is now manager of Agrico's Northeast sales division, with headquarters in New York City.

W. H. Phillips becomes branch manager at East St. Louis, Ill. He was formerly assistant manager at East St. Louis, and replaces J. W. Engle, who is now manager of Agrico's western sales division, with headquarters at St. Louis.

D. J. Boyer becomes branch manager at Buffalo, N.Y. He was formerly manager of Agrico's plant at Three Rivers, N.Y. He replaces C. R. Clemons, who is now manager of Agrico's mid-southern sales division, with headquarters in Greensboro, N.C.

Edgar B. Stalnaker becomes branch manager at Three Rivers, N.Y. He was formerly assistant manager at Carteret, N.J.

T. S. Bryars becomes assistant branch manager at Montgomery, Ala. He was formerly a salesman at Pensacola, Fla.

J. W. Grooms becomes assistant branch manager at Nashville, Tenn. He formerly filled a similar capacity at Greensboro, N.C.

J. H. Dorsey has been named assistant branch manager at Agrico's Cairo, Ohio, plant. He was formerly the Agrico representative in south central Pennsylvania.

Two Staff Appointments Announced by IMC

SKOKIE, ILL.—International Minerals & Chemical Corp. announces the addition of Donald Lewis to the staff as supervisor of sales in Vermont and New Hampshire. At the same time, Rome Schwagel was named supervisor of sales for Maryland, Delaware, Virginia, West Virginia and North and South Carolina.

Mr. Lewis, a winner of several agriculture awards, operates a 350-acre farm near Woodstock, Vt.

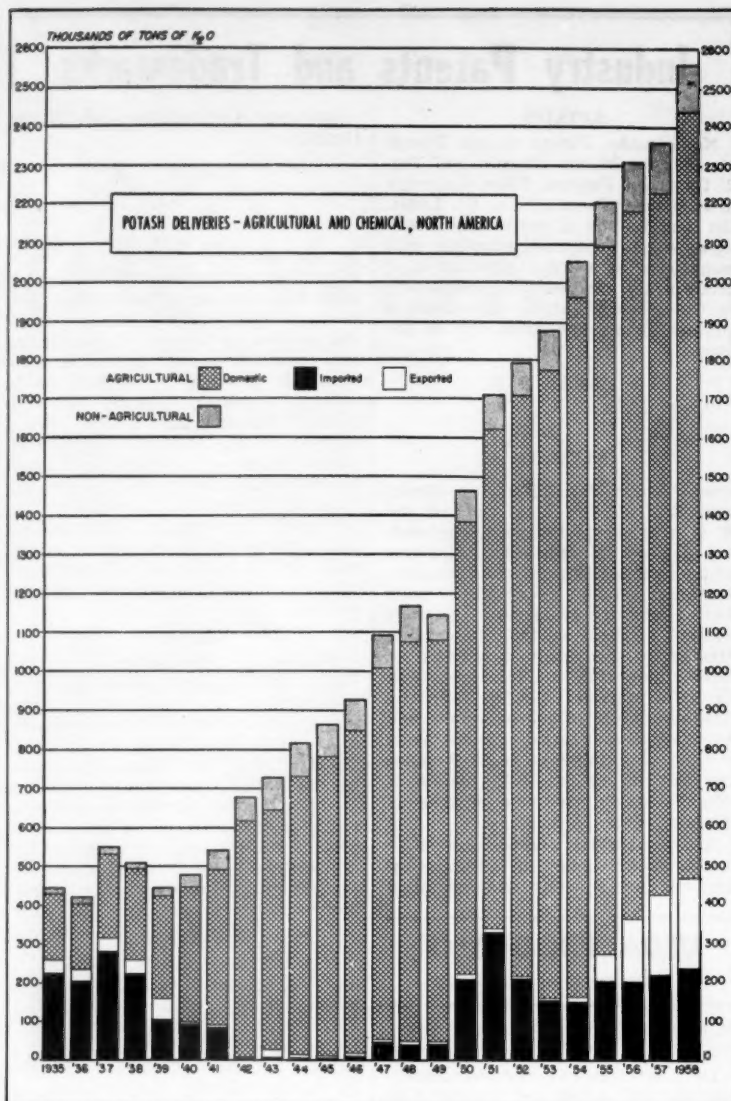
Mr. Schwagel was vice president of Eastern States Soil Builders, Inc.

North Dakota Fertilizer Sales Show Jump in '58

BISMARCK, N.D.—Fertilizer sales in North Dakota for 1958 amounted to 112,473 tons, which was 13,538 tons more than in 1957, reported R. O. Baird, director, state food commissioner and chemist, State Laboratories Department.

Most popular material in the state was ammonium phosphate (11-48-0) with 27,455 tons being sold. Ammonium phosphate-sulphate (16-20-0) was a close second with 24,661 tons being sold. Third with 17,247 tons sold was superphosphate 42-46%.

Most popular grade was 16-16-8 with 2,962 tons sold.



POTASH DELIVERIES—The growth of potash deliveries is shown in the above chart, prepared by the American Potash Institute. Deliveries for agricultural purposes in the U.S., Canada, Cuba, Puerto Rico and Hawaii by the eight principal American producers and the importers totaled 3,805,057 tons of salt containing an equivalent of 2,229,724 tons K₂O during 1958. This was an increase of 10% in salts and K₂O over the same period in 1957. A story of 1958 deliveries appeared on page 1 of the March 23 issue of Croplife.

Davison Names Controllers For Three Operations

BALTIMORE—Appointment of controllers for its three operating units, with full responsibility for financial and accounting activities, has been announced by W. R. Grace & Co. Davison Chemical Division.

John L. Dowell is named controller, chemicals division; A. H. Hanssen, Jr., controller, mixed fertilizer division, and Edgar L. Linthicum, Jr., controller, agricultural chemicals division.

Mr. Dowell is an accounting graduate of Baltimore City College and has been with Davison since 1934 in financial, accounting and management positions, including periods as office manager of the Curtis Bay plant and director of budgets and reports for the division.

Educated at Baltimore College of Commerce and the Johns Hopkins University, Mr. Hanssen joined Davison in 1937. He organized credit and collection departments and functioned as general credit manager.

Mr. Linthicum, attended the University of Maryland and Baltimore College of Commerce. He held accountancy and auditing positions at Commercial Credit Co., American Oil Co. and General Motors Corp. before coming to Davison in 1945. Among other positions, he has been manager of internal auditing.

LIQUID FACILITIES

SHERIDAN, ORE.—Facilities to handle liquid fertilizer for farm customers have been installed here by Sheridan Grain Co. Kenneth Knutson is in charge of the new department.

\$400,000 State Aid For Mosquitoes Added

SACRAMENTO, CAL.—A total of \$400,000 for state aid to mosquito abatement districts in California has been restored to the state budget by action of a subcommittee of the Legislature's assembly ways and means committee.

The amount previously had been deleted upon recommendation of A. Alan Post, legislative analyst. He had proposed that only \$11,370 be granted for two districts which have a tax rate in excess of 40¢. Those with a tax rate of less than 40¢ would be expected to finance the total amount of their mosquito control programs.

Waverly Jack Slaterry, state senator from Lake County, testified that the mosquito and gnat abatement problem in his county is serious and withholding of state aid would work a hardship.

Myron Frew, assemblyman from Tulare County, told the committee that the San Joaquin Valley is in need of state aid to solve its mosquito problem.

Thomas Sperbeck of the Sutter-Yuba mosquito abatement district warned that the danger of encephalitis and other mosquito-borne diseases is a threat if mosquito abatement is curtailed because of a lack of state support.

"The Sacramento Valley is vitally concerned," said Mr. Sperbeck. "Eliminating this money would be disastrous. If we have another epidemic we will place the responsibility with those who caused this budget cut."

Final legislative action on the budget is not expected until May.

Chemagro Corporation Elects New Officers



George W. Hill, Jr. Herbert F. Tomasek

KANSAS CITY—The board of directors of Chemagro Corp., Kansas City, has announced the election of George W. Hill, Jr., as chairman of the board and Herbert F. Tomasek as president.

Mr. Hill, one of the founders of the company, was president previously.

Mr. Tomasek was vice president prior to the election. His office will be located at the company's recently completed Kansas City plant.

The board also elected Hugh H. Swink as vice president-sales, Dr. Rosmarie von Rumker as vice president-research and development, and Dr. Robert C. Scott as vice president-manufacturing. All three had previously served for several years as heads of their respective departments.

Alfalfa Weevil Larvae Hatching in Virginia

BLACKSBURG, VA.—Larvae of the alfalfa weevil, an insect which has become one of the alfalfa grower's foremost pests, are now hatching throughout Virginia, according to the weekly report on insect activity released by Arthur T. Morris, associate entomologist at Virginia Polytechnic Institute here.

Probable exceptions are Highland and Bath counties, Mr. Morris said.

The entomologist said it is not believed advisable to apply granulated heptachlor or heptachlor in fertilizer to alfalfa fields seeded to alfalfa this spring, especially this late. It will soon be time to apply the heptachlor spray, and farmers were advised to keep a close watch on their fields.

Clover leaf weevil larvae also are hatching in clover and alfalfa fields now.

The clover leaf weevil larvae have a light brown or tan colored head as compared to the jet black head of the alfalfa weevil larvae, Mr. Morris said.

Meadow spittle bug nymphs are hatching in alfalfa and other host forage crops now. Insecticidal treatments for alfalfa weevils will help control the spittle bug in alfalfa, but many fields of clover and other forage crops will have to be treated. Sprays should be applied when the first tiny spittle masses are seen in the fields.

Green June beetle larval damage will begin to show up in pastures and lawns during the next two or three weeks, Mr. Morris said.

Montana Bill Signed

HELENA, MONT.—Gov. Aronson of Montana signed into law a legislative bill which provides that 5% of the fees collected for commercial fertilizer analysis go to the general fund and 95% to help pay for administration and enforcement of the Montana fertilizer law.

MORE CORN BORERS

MANHATTAN, KANSAS—A survey of overwintering European corn borers in Jefferson County, Kansas, indicates a higher winter survival than that of last year. A survival of 43% this year indicates plenty of moths for laying eggs during June if corn is tall enough for the borers to become established in the plants, according to the Kansas Insect Survey Report.

Specialist Predicts Doubled Income for Oregon's Range Grass

CORVALLIS, ORE.—Income from Oregon's ranges—roughly a dollar an acre for range grass—may double in the next 25 years, predicts E. R. Jackman, Oregon State College extension range crops management specialist.

Chemicals to kill unwanted brush, and machines to seed the land are now available. Pioneer ranchers are leading the way and experiment stations, such as the Squaw Butte-Harney station near Burns, are providing the answers, Mr. Jackman continued.

A great deal of Oregon is range land if you consider all unplowed land as such, he says. About 92%, in fact. However, much of the west side forest is too thick for livestock to roam so really isn't thought of as range.

Oregon's range livestock business

got a good start about the time Oregon became a state. The big problem before that was Indians. It wasn't until the last of the Indian wars in 1878 that the big open country was free from Indian attacks. From then on, there were big cattle drives east. The railroad reached Ontario in 1883. This became one of the west's big livestock shipping points.

After the Union Pacific reached Portland, livestock numbers kept booming. Then the Columbia Southern built to Shaniko and for many years that little town (seldom in the news now) was the country point in America that originated the most wool.

The range was severely over-used and nearly ruined. It was open to all comers, so no one could save it. It went down hill gradually and now carries less stock than it did 50 years ago.

Now, on both public and private range in Oregon, there are about 800,000 cattle and 400,000 sheep. Horses, once there by tens of thousands, are strictly a minority group.

Jerry G. Woods Dies Following Heart Attack

ST. LOUIS—While on vacation with his family at the Arizona Manor, Phoenix, Ariz., Jerry G. Woods, general manager of the chemical division of the Mississippi River Fuel Corp., died March 25, of a heart attack.

Mr. Woods graduated in 1941 from the University of Texas with a B.S. degree in chemical engineering. From 1941 until 1951, he was employed by Dow Chemical Co., Freeport, Texas. From 1951 to 1957, he was vice president of the Olin Mathieson Chemical Corp. at Brandenburg, Ky. He joined Mississippi River Chemical Co. in 1957.

Cut Grasshopper Fund

SANTA FE, N.M.—In a last-minute trimming of the state appropriations bill, the New Mexico Legislature cut the Grasshopper Control Board's fund from \$100,000 to \$50,000.

You'll get a better understanding of the fertilizer market from this valuable new book

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GIBBERELLIN RESEARCH

(Continued from page 1)

means of benefiting winter celery growers.

(3) Under some conditions, it produced bigger potato crops, and potatoes of better quality.

(4) Applied to lemon trees, it caused the fruit to color more slowly and store longer than lemons from untreated trees, and also enabled the trees to store their own fruit over longer periods—a potential means of reducing grower costs by limiting pickings to fewer per year.

(5) It greatly increased the yield of seeds in the Great Lakes variety of lettuce.

Negative effects still accompany some of these potentially useful findings, however, and until they're worked out, many of the university scientists are reluctant to make recommendations for grower use of the chemical.

Following are reports on the effects of gibberellin on a number of crops on which tests were made by University of California researchers.

GRAPES—Robert J. Weaver, viticulturist at Davis, has been working with gibberellin on grapes since 1957. He says cumulative test results indicate that "gibberellin has bright possibilities in grape production." But, he adds, growers should use the chemical only on a small scale at present, because more work is needed before final recommendations can be made.

Here are the general results of his tests on specific grape varieties:

(1) Black Cornith (Zante Currant)—Gibberellin in the range of 2½-100 parts per million (ppm) produced a good set of large berries with clusters looser than those usually produced by chemicals used commercially to increase fruit set. It remains to be seen, however, whether the berries are too large for the bakery trade, a big user of such raisin grapes.

(2) Thompson Seedless—Gibberellin in the range of 5-50 ppm produced very large berries; the chemical shows promise of replacing or supplementing the practice of girdling, the conventional means of increasing fruit size in table grapes.

(3) Zinfandel—Pre-bloom sprays of gibberellin material elongated the cluster parts, producing a looser cluster that would be less susceptible to rot than the normal tight cluster. They also produced a number of "shot" berries—small, seedless berries that do not mature—in each cluster, but these are not detrimental in a wine grape. A concentration range from 1-10 ppm may be best. The data indicate that maturation may be hastened.

(4) Tokay—Gibberellin produced many shot berries that made this variety unacceptable as a table grape.

Mr. Weaver also notes these negative conclusions on gibberellin: the use of pre-bloom sprays on seeded table grapes is not recommended at this time; gibberellin has not increased the set of such seeded varieties as Muscat of Alexandria, Red Malaga, and Ribier.

Pre-bloom sprays of gibberellin hasten flowering, Mr. Weaver says, and the chemical also seems to make some grape varieties color and ripen faster, but more tests must be made to prove this conclusively. In 1958 tests on ripening, he sprayed Zinfandel grapes at three different times; he found a "marked increase" in ripening in grapes sprayed June 4, little increase from a May 2 spray, and no increase from a July 29 spray.

The researcher found that fall spraying with gibberellin may extend the dormant period of grape vines, the first such effect from the chemical reported. In many crops—such as

potatoes—gibberellin shortens the dormant period. The lengthening effect on vine dormancy is not only of scientific interest, it may have a practical value as well, Mr. Weaver says. In certain grape-growing regions of California, it might be feasible to set back foliage by treating the vines with gibberellin, thereby protecting against vine damage from early spring frosts.

As a result of 1957 tests at Davis, Mr. Weaver points out, some 1,000 acres of vineyards were treated with gibberellin in 1958. It is expected that many more acres will be treated in 1959, he says.

VEGETABLES-CELERY—At the citrus experiment station in Riverside, Oscar Lorenz, vice chairman, and Frank Takatori, assistant specialist, in the department of vegetable crops report that gibberellin may be of value to growers of winter celery. By using the material three weeks before harvest, growers can increase the length of celery shanks, which in winter often don't grow long enough for profitable marketability.

Messrs. Lorenz and Takatori suggest a dosage—for growers' experimental use—of between 25 and 50 ppm.

However, they warn against applying the material more than about three weeks before harvest, as the chemical causes celery to go to seed prematurely. This can cause complete loss of a crop.

Growers in Los Angeles, Orange, San Diego, Ventura, and Monterey counties would be the most likely users, since they produce large crops of winter celery.

VEGETABLES - POTATOES—Herman Timm and Lawrence Rappaport, of the vegetable crops department at Davis, have tested gibberellin on potatoes for two years. They found early in their work that gibberellin could break the potato's "rest" or "dormant" periods, speeding the emergence of potato sprouts.

"In some tests—on freshly harvested tubers—gibberellin more than doubled the yield and produced a potato higher in quality as well," Mr. Rappaport says. "But the concentration of gibberellin in potato seed treatment is vital.

"The grower must understand that, while the right amount of gibberellin should produce good results, the wrong amount can cripple his crop. The concentration of gibberellin for dipping potato seed should never be higher than 5 ppm."

Mr. Timm points out that certain apparent effects of gibberellin contain the promise of sizable savings in potato production costs: "Field

trials have indicated that gibberellin will reverse the tendency of potatoes, planted wide apart, to produce over-size tubers that won't grade out as number ones. With gibberellin, we may be able to keep a fairly wide planting distance and still produce the desired, smaller potato that will grade out high. The saving in potato seed costs from this could be considerable."

Farm advisers in many potato-growing counties of California will be making further tests on gibberellin this year, Mr. Timm says.

He is not yet ready to term gibberellin an unmixed blessing for potato growers, however. He advises that potato seed be dipped in fungicide mixed with the gibberellin solution. "There is a possibility that gibberellin may make potato plants more susceptible to the Rhizoctonia fungus, and under certain weather conditions, that fungus can be ruinous," Mr. Timm says.

"Preliminary laboratory and greenhouse tests tend to show a consistent relationship between gibberellin application and Rhizoctonia presence," he says. "What that relationship is, our plant pathologists are trying to find out. Until we do have the answer, it is highly recommended that the grower mix fungicide with the gibberellin dip, to protect the crop as fully as possible."

VEGETABLES - LETTUCE and OTHER CROPS—Vegetable crops seed specialist James F. Harrington, in cooperation with Mr. Rappaport, found that gibberellin doubled the seed yields and speeded the maturation of Great Lakes lettuce. Best results in tests at Davis were from a spray of 10 ppm. of gibberellin, applied either twice (at the 4- and 8-leaf stages of the plant) or three times (at the 4-, 8- and 12-leaf stages).

"Two or three sprays of gibberellin is a cheaper way of getting seed crops of hard-heading varieties of lettuce such as Great Lakes," Mr. Harrington said. "The cost of 2 or 3 sprays is estimated at \$18 to \$25 an acre; the conventional de-heading operation costs between \$40 and \$60 an acre."

Mr. Harrington also found that gibberellin would produce better bolting in such biannual crops as beets, parsley, carrots, and celery, if these crops lacked the amount of exposure to cold temperatures necessary for desirable natural bolting. Under these conditions, a spray of 100 ppm. of gibberellin caused more rapid bolting, and made a bigger percentage of plants bolt. Thus, gibberellin was able to replace part of the cold requirement in these crops, the researchers concluded, but not all of it.

Mr. Harrington reported last year

that tomato seed soaked in a 1,000 ppm. solution of gibberellin for 2 to 4 hours, then thoroughly dried, produced better emergence if the seeds were planted in cool soil, or in soil that crusted easily, or if the surface soil was dried quickly by wind. But where conditions were excellent for germination, gibberellin was of no help, he said.

In tomato culture generally, there is no evidence that gibberellin improves tomato yields or quality when applied as a plant spray, Mr. Rappaport says.

CITRUS FRUITS—Some encouraging results on citrus are reported by Robert K. Soost, Riverside campus associate geneticist. Field sprays of Clementine mandarin in the Coachella Valley produced a six-fold increase in yield on one low-yielding orchard. However, on an orchard with normal yield, gibberellin produced no increase, and high dosages even caused a decrease. Also, in this case, gibberellin-treated trees produced smaller fruit.

Experiments with the chemical remain promising, however, Mr. Soost states. Clementine mandarin is the only California citrus that is self-unfruitful: That is, it needs to be interplanted with another pollinizing citrus variety to be fruitful. Interplanting leads to improved production but also increases seediness. To get around this drawback, Mr. Soost will try combining gibberellin with 2,4-D. This mixture, in proper dosage, may keep fruit sizes normal while still achieving increases in yield, he says.

A positive effect of gibberellin on lemons was discovered by Charles W. Coggins, assistant plant physiologist at Riverside. He used the chemical to increase both the proportion of desirable storage lemons and the storage life of a given color class.

Entire trees were sprayed with various gibberellin dosages. Within a few weeks it was apparent that treated trees produced greener lemons. Of the harvestable fruits picked two, four, and seven months after treatment, there was a striking reduction in the proportion of the undesirable tree-ripe class and an increase in the desirable silver and greener classes, as compared to the control trees.

Gibberellin-treated lemons in storage colored more slowly and stood up somewhat better than lemons from untreated trees.

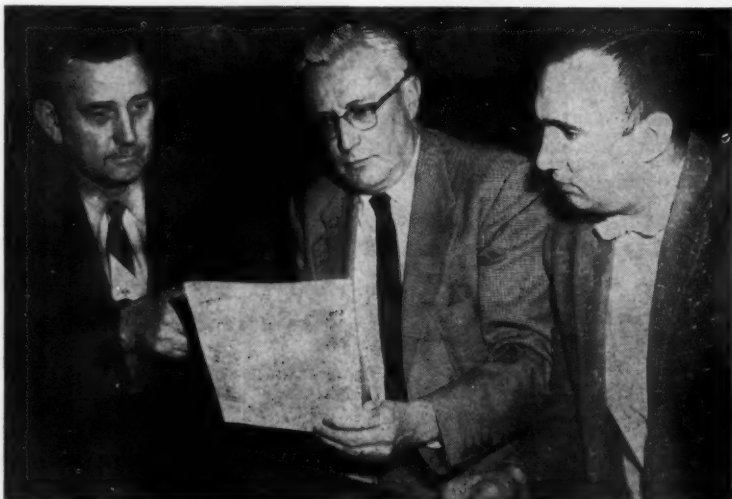
These findings suggest that gibberellin ultimately may be helpful in providing the consumer with a better-quality, fresher lemon, according to Walter Reuther, chairman of the department of horticulture at Riverside.

"But before these intriguing possibilities can be realized," he warns, "some undesirable side effects of gibberellin will have to be eliminated or found to be relatively unimportant. Gibberellin increases leaf drop, thorniness of shoot growth, thickness of stems, and loss of buttons, which prevent entry of harmful fungi."

Other negative results with gibberellin were observed by Henry Z. Hield, associate specialist at Riverside. He found navel oranges sensitive to gibberellin in respect to leaf drop and twig dieback. These effects increased so much after gibberellin applications that yield of some treatments on test plots dropped as much as 50%.

These results contrast strongly with those of experiments the previous season with gibberellin on parts of trees, in which Mr. Hield had doubled fruit set and increased vitamin C and juice content of navel oranges.

The explanation? It may be that in treating part of a tree only there was a dilution of the gibberellin. This suggests that the lowest effective concentration of the chemical has not been found for citrus use. The fact that 1958 was a heavy leaf-drop, twig-dieback year for all citrus may also enter as a causal effect. Further ex-



AT MONTANA MEETING—George Mason, newly elected president of the Montana Plant Food Assn., is shown above discussing Montana's soil testing program with Ted Fosse, county agent, left, and Bernard L. Brown, Montana State College extension soils specialist. A story of the association's meeting appeared on page 21 of the March 9 edition of Croplife.

periments now in progress may clarify this point.

DECIDUOUS FRUITS — Davis pomologists report few favorable results thus far in experiments with gibberellin on deciduous fruits. Dillon Brown, pomologist, found that gibberellin sprays on peaches and apricots seemed to promote bud drop, particularly if the sprays were applied early. Mr. Brown and William Griggs, also a pomologist, are now experimenting with gibberellin sprays on young pear trees.

Julian Crane, also of the department of pomology, found in early tests with gibberellin on figs that the substance produced fruit set without pollination, but it also produced—at some concentrations—unwanted tree growth during the fruit setting period. Mr. Crane and his assistants are now trying to track down the concentration of the chemical that will produce the wanted reaction without the unwanted effect. He also found that gibberellin gave less fruit set than cross pollination; but a combination of cross-pollination and gibberellin produced the best set. He is now working with gibberellin on peach seeds, to test the substance's ability to supplant cold requirements.

Hudson T. Hartmann, pomologist, got no increase in fruit size or fruit set in olives from gibberellin, but he did find that the chemical speeded the germination of olive seeds. This effect is unimportant commercially, since seeds are little used for olive propagation in California, but it may be of help to plant breeders who must use seeds in developing hybrid varieties.

Another Davis pomologist, Royce S. Bringham, reports that gibberellin also hastened strawberry seed germination, and that it may be of value in variety development research since some seeds are extremely difficult to germinate. Mr. Bringham has also found that gibberellin does stimulate strawberry plant growth, particularly runner development.

FLOWER CROPS AND ORNAMENTALS—Chandler P. North, principal laboratory technician at the University of California, Los Angeles, reports that gibberellin injected into the stems and applied externally to the buds of camellia reticulata has produced early blossoms and early shoot growth. The length of the early shoot growth can be controlled by the amount of gibberellin injected or applied externally. In this manner a sparse plant such as Captain Rawes can be made more bushy. Early blossoming may be of advantage to camellia hybridizers (breeders). It was not possible to produce shoot growth or blossoming between May and November, Mr. North notes.

Roy M. Sachs, assistant professor of floriculture and ornamental horticulture at UCLA, believes there are good possibilities for incorporating gibberellin in greenhouse watering solutions. The chemical would thus be applied to the soil. Plants would take it up and respond by growing faster but without showing distortions that have accompanied direct applications of gibberellin to leaves and stems. He has noted a 10 to 15% increase in the growth rate of carnations taking up gibberellin from the soil. This acceleration might be useful in the propagation of carnations commercially.

V. T. Stoutemyer, chairman of the department of floriculture and ornamental horticulture at UCLA, reports apparently useful results from gibberellin applications on the carob tree, a potential California crop now being grown experimentally near Vista. Slow in growth, the carob can be speeded by gibberellin, thus accelerating its production in nurseries. Certain other plants—ornamental bushes—can similarly be nudged to a faster growing pace by gibberellin, Mr. Stoutemyer's experiments indicate.

Quicker growth for commercial

growers may also result from gibberellin applied to an ornamental plant used in landscaping, the Giant Bird of Paradise, reports O. R. Lunt, associate professor of soil science at UCLA. Gibberellin doubled the normal height of the plant in one season. Negative effects on appearance, however, were noted.

FIELD CROPS and RANGE GRASSES—In 1957 and 1958, Horton M. Laude, of the agronomy department at Davis, sprayed gibberellin on range plots, to test the substance's ability to produce greater growth in native stands composed of various grasses. Only occasional species responded, and the growth stimulation was not enough to significantly affect total yield.

"For range use, only a one-spray treatment is feasible, and one spray of gibberellin did not produce any appreciable response in the stands tested," Mr. Laude says. "I did not find these results surprising. In a range plot, the various grasses are at different stages of growth at any one time. The possibility is remote that a single application of a single substance could produce beneficial results on all these grasses."

Another Davis agronomist, Luther G. Jones, has tested gibberellin on seed production in legumes. He used recommended concentrations of the chemical on alfalfa, red and ladino clovers, with these results:

Alfalfa—no determinable effect on seed production.

Red clover—a tendency toward higher seed yields, and a pronounced effect on flowering—much bigger, and more colorful flowers.

Ladino clover—a significant increase in seed yield, but test plots were too small to provide meaningful conclusions. Also, repeated applications were used here, whereas for actual production a one-spray treatment is a must. Single gibberellin applications on different plots at different intervals after cutting revealed the highest effect of the chemical when applied 20 days after the clover was cut. Yields were not significant, but again, gibberellin increased height and produced bigger flowers.

E. W. Laubscher, doctoral candidate in agronomy, tested gibberellin at different temperatures on the range grass Prairie Brown. He found that the chemical definitely increased plant growth at both high and low temperatures, but showed an optimum effect on growth at 70°F. For leaf area increase, he found the gibberellin peak effect was somewhere between 55 and 70°F. Mr. Laubscher points out that on this grass gibberellin seemed to have its greatest effect on leaves when they were young.

On such oil crops as safflower, flax, and sunflower, Paul F. Knowles, agronomist, and his assistants found that safflower gave the most pronounced response to gibberellin. But yield was not increased, Mr. Knowles said, and in some cases the yield was decreased. Further tests will be made on these crops.

Leroy H. Zimmerman, USDA agronomist at Davis, has tested gibberellin on castor beans. He found the often-mentioned internode elongation, but has made no tests on yield.

BASIC RESEARCH — In experiments at UCLA, Professor Roy M. Sachs, cooperating with Anton Lang, professor of botany, has extended their last year's observation that gibberellin causes stem elongation on rosette (stemless) plants by increasing cell division as much as 1,000%.

The two researchers found new information on the time of action of gibberellin in increasing cell division—they found precisely when the chemical incites division during the growth process. They learned that gibberellin actually creates a new zone of cell division and that this is mainly responsible for the growth in stem length in test plants.

Normally a plant has specific regions where cells divide most actively.



James Gorman

Cyanamid Nitrogen Manager Retires, Replacement Named

NEW YORK—James Gorman, manager of nitrogen products for American Cyanamid Co.'s agricultural division since 1944, retired March 31, following 32 years with the company. C. Paul Schafer, former assistant, will replace him, announced B. F.



C. Paul Schafer

Bowman, division director of marketing.

Retiring with Mr. Gorman will be his sister Georgia, who has been a Cyanamid employee for 36 years. Another sister, Emeline, retired in 1953 after 29 years.

Mr. Schafer joined the firm in 1946 as a field representative and became assistant nitrogen products manager in 1950.

In effect, they found, gibberellin is creating a new zone of maximum growth.

By thus pinpointing the time and place of gibberellin effect on cell growth, Profs. Lang and Sachs believe they may have contributed to the understanding of the entire problem of why plants grow at characteristic rates. They are continuing their investigation to see if there is a correlation between this new zone of cell division and the rate of stem elongation in various plants.

Charles West, biochemist and assistant professor of chemistry at UCLA, has isolated a new gibberellin from green bean seed. The gibberellin has some properties that are like those of already-known gibberellins; other properties are different.

Bernard Phinney, geneticist at UCLA, has found that native gibberellins are probably of universal occurrence in higher plants. He has also shown that there are many different kinds of these native gibberellins in plants, on the basis of biological and chemical properties.

The universal occurrence of native gibberellins places more emphasis on the regulation of plant growth by applied gibberellin, says Mr. Phinney, since it is probable that the relative effectiveness of the chemical when applied depends on the amount of the native chemical already in the plant.

Discovery of native gibberellins is of importance in understanding the chemical factors that control growth in plants, he states. The gibberellins now become a third principal class of naturally-occurring growth regulator, taking their place beside the auxins and the kinins.

At Davis, Mr. Rappaport points out that gibberellin's ability to break the rest period in potatoes and other crops has inspired new questions into exactly what this "rest" is, and how it comes about. Are gibberellins one of the natural factors controlling plant dormancy? Mr. Rappaport is now taking up a research project on those questions, in cooperation with Ernest Smith, a doctoral candidate in the department of vegetable crops.

Botanists at Davis are continuing studies of how plants use gibberellin. C. Ralph Stocking successfully used radioactive hydrogen combined with gibberellin to trace the movement of the chemical in the plant. He found

that gibberellin applied to the leaf of a bean plant moved down to the roots, then upward to all parts of the plant, in about 24 hours. He is now repeating these experiments with a much stronger radioactive material—Carbon 14.

Mr. Stocking and H. B. Currier, botanist, assisted by Mahmood Clor, have also tested the effects of gibberellin combined with other plant growth regulators. They found that the combination of gibberellin and 2,4-D produced more growth than the gibberellin alone, and they intend to make further tests on this characteristic. How the gibberellin is metabolized in the plant, and what are the breakdown products of this metabolism, are questions that such research may ultimately clarify.

B. G. Coombe, a doctoral candidate in viticulture at Davis, has provided further information on the complex gibberellin picture with studies of naturally-occurring gibberellins in grapes. Mr. Coombe tested the activity of extracts of grape berries and grape pollen on dwarf corn.

He found activity in the pollen of both seeded and seedless varieties. He found responses indicating naturally-occurring gibberellin in young grapes of seedless varieties (Thompson seedless, Black Corinth, Seedless Emperor). He found no activity in those same varieties when the berries were older, and no activity in grapes of any age of seeded varieties. But, he points out, absence of activity does not necessarily mean that gibberellin is not present.

"The activity measured in young fruit of Seedless Emperor was very high," Mr. Coombe says, "as high as the highest quoted in literature on gibberellins (about 1 ppm., dry weight)."

"It is interesting that seedless varieties respond remarkably in fruit growth to gibberellin sprays, and these are the ones—at least of those tested—that contain natural gibberellins. Seeded varieties don't respond much, and also don't seem to have natural gibberellins."

In the pesticide residue laboratory at Davis, Gunter Zweig, director, is probing into the basic structure of the gibberellins. Mr. Zweig produced the Carbon-14-gibberellin material that is being used in the translocation studies. He is also cooperating with the departments of vegetable crops, plant pathology, viticulture, and agronomy in gibberellin experiments.

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Scare Stories Continue, But Insecticide Trade, Food & Drug Adm., Offer Rebuttals

HOWEVER INURED it might be to inaccurate and untrue assumptions made against it by sensation-seeking writers, the pesticide industry's eyebrows are still fluttering at the assertions carried in a "Police Gazette" article of recent date. Titled "Warning! New Deadly Chemical in Bread," the essay somehow managed to conquer time, space and common sense to associate an accidental contamination incident in England with the insecticide poisoning of the entire U.S. source of wheat and subsequent flour and baked goods.

Just how far off base this author extended himself is reflected in comments by Wallace F. Janssen, director of the division of public information of the Department of Health, Education, and Welfare, Food and Drug Administration, who explains the actual facts and contrasts them with the diatribe appearing in the magazine article.

It seems that in England, flour was being shipped in a railroad freight car which had previously carried a consignment of concentrated endrin (from 800 to 1,600 times higher than the strength at which it would be used as a spray in fields). A portion of this toxicant had been accidentally spilled on the floor of the car contaminating the flour and subsequently the bread made from it.

From this incident, reported in a British medical journal, the Gazette works up such a case that readers of the article could well be fearful to eat anything even remotely associated with wheat.

In Mr. Janssen's letter to Shell Chemical Co., maker of the pesticide involved in the article, he states that the article "is a vicious and completely unwarranted attack upon the safety of one of our basic foods. It apparently was prepared with a calculated effort to distort the current facts about the use of pesticide in the production of foods and the matter of pesticidal residues in our food supply."

As to the relationship of the English incident to the contamination of American crops, one wonders how any writer could manage to twist facts to such a degree. Mr. Janssen points out that the quantities of endrin in the contaminated flour and in the bread made from it were "so far in excess of any possible residues of the pesticide that could result from the spraying of growing crops, as to make this poisoning incident completely irrelevant to the matter of pesticide residues in foods."

The article took apparent delight in its manifest irresponsibility. Here are some of its statements: "Bread is the staff of life . . . but from the first bite of your morning toast, to the last crumb of your dinner roll, you may be eating deadly poison! Because of dangerous chemicals being sprayed on the farmers' crops, often without heeding medical warnings, the United States is rapidly becoming a nation of weak, sickly people . . . During the 1958 wheat harvest season, more than 12 million acres of this staple grain were contaminated."

"Because the farmers either disregard the manufacturers' instructions on the use of the chemicals, or because the spraying is done carelessly, the end result is still frightening. Every loaf of bread, every cake or pie, every cereal you eat, may carry a poisonous insecticide . . . it is the daily accumulation of these dangerous drugs that is harmful. Day by day you are building up to the danger level and when you'll reach the 'point of no return' is only a matter of time."

"... At the very moment you are reading this, there may be hundreds of thousands of men, women and children suffering from dieldrin poisoning. And their doctors are mystified as to the cause and treatment! . . . The net result today, according to medical authorities, is that the public's health has been sacrificed . . ."

Apparently readers of the Gazette haven't seen anything yet, for a note at the conclusion of this article says that next month the paper will carry an article "exposing dangerous poisons in the nation's food supply. It will be a real shocker." We suspect that this is no exaggeration.

In his comments on the already-printed article, Mr. Janssen reviews the provisions of laws governing residues on foods, pointing out facts that everyone in the pesticide business knows . . . that extensive data must be submitted before a pesticide can be put on the market.

As to wheat, the crop belabored in the Gazette article, a tolerance of 0.1 part per million of dieldrin has been set, but residues of endrin are not allowed. "The authorized use of endrin in the production of wheat, which leaves no residue on harvested wheat, provides for an application of one-quarter pound an acre in a single application not later than 45 days prior to harvesting," Mr. Janssen says.

Thus another case of gross distortion of facts, figures, content, import and severity of circumstances is brought before the public by a writer whose sole aim, apparently, is to attract reader attention by crass exhibitionism without regard to propriety. The pesticide manufacturers, not alone the makers of the products assaulted in the article, should always keep in mind that there are strong rebuttals to attacks of this type.

While it is not wise to lend dignity to outbursts of the type outlined here, it is a good practice to have at hand potent rebuttals. When people realize that federal law provides for the use of pesticides in the production of raw agricultural commodities in a manner whereby foods will not contain harmful quantities of pesticide residues, they should not be so easily taken in by scare stories.

Letters to editors of local papers, talks before various service groups and garden clubs and even in conversation with ordinary citizens, one can get points across quietly and effectively without necessarily calling attention to some of the irresponsible writings.

Tolerances established by FDA are made for one purpose: To protect the consumer. Regardless of how vociferously this may be denied by writers of scare articles, the fact is that these regulations are vigorously enforced. The public is being protected adequately and there is plenty of proof that, in general, the health levels of the U.S. belie the statement that we are rapidly becoming a nation of "weak, sickly people."

Perhaps the very exaggeration of the Gazette article reveals it to be unfounded on fact. The trouble is, not many of its readers know where to place the line between fact and fancy.

It is the job of those who do know, to pass along the information in clear, concise words . . . even though our story may lack the frightening qualities of poison, convulsion, agony and death.



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MEETING MEMOS

May 21—Chemical safety workshop sponsored by the Manufacturing Chemists' Assn., Palmer House, Chicago.

June 4—Executive committee meeting, fertilizer section, National Safety Council, Hotel Roanoke, Roanoke, Va.

June 11-13—87th annual meeting, Manufacturing Chemists' Assn., The Greenbrier, White Sulphur Springs, W.Va., John L. Gillis, vice president of Monsanto Chemical Co., program chairman.

Meeting Memos listed above are being listed in this department this week for the first time.

April 8-11—Symposium on forest soils, Louisiana State University, Baton Rouge, La.

April 29-30—Symposium on transportation, regulation and packaging of chemical products, sponsored by the Manufacturing Chemists' Assn., Engineering and Scientific Center, Cleveland, Ohio.

June 9-10—Seventeenth Annual Convention of the Association of Southern Feed and Fertilizer Control Officials, Velda Rose Motel, Hot Springs, Ark.; Maurice Rowe, Virginia Department of Agriculture, 1122 State Office Bldg., Richmond 19, Va.

June 14-17—National Plant Food Institute, Annual Convention, the Greenbrier, White Sulphur Springs, W. Va.

June 23-25—Pacific Branch, Entomological Society of America, 43rd annual meeting, El Dorado Hotel, Sacramento, Cal. Dr. Leslie M. Smith, University of California, Davis, branch chairman.

June 29-30—Seventh Annual California Fertilizer Conference, University of California campus, Davis, Cal. J. H. Nelson and Earl R. Mog, co-chairmen.

July 7-9—Regional Fertilizer Conference, co-sponsored by the Pacific Northwest Plant Food Assn. and state colleges and universities in the area, Winthrop Hotel, Tacoma, Wash.

July 29—Annual Kentucky Fertilizer Conference, Guignol Theater, University of Kentucky campus, Lexington, Ky.

Aug. 3-7—Gordon Research Conference on biochemistry in agriculture, Kimball Union Academy, Meriden, N.H.

Oct. 14-16—Pacific Northwest Plant Food Assn. Annual Convention, Chinook Hotel, Yakima, Wash.

Oct. 21-23—National Agricultural

Chemicals Assn., 26th annual meeting, French Lick-Sheraton Hotel, French Lick, Ind., Lea S. Hitchner, executive secretary.

Nov. 4-6—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C. Dr. Vincent Sauchelli, National Plant Food Institute, chairman.

Nov. 9-11—California Fertilizer Assn., 36th annual convention, Fairmont Hotel, San Francisco.

Nov. 16-20—National Aviation Trades Assn., 20th annual convention, New Orleans, La.

Dec. 9-11—International Crop Protection and Pest Control Exhibition, Seymour Hall, St. Marylebone, London, England.

University of California Receives Six Cash Grants

BERKELEY, CAL.—Six cash donations to the division of agricultural sciences of the University of California figured last month in the promotion of as many research projects in the field of agricultural chemicals.

The largest of these was for \$10,000, made by the Fruit Growers Supply Co., of Sunkist, to study means of preventing decay on fruit while in transit, including the use of chemicals. Next in size was a grant of \$2,750 made by the Beet Sugar Development Foundation for research on nematode-plant relationships in sugar beets.

The American Potash Institute, Inc., gave \$1,500 for research on lead analysis and on potash deficiency with deciduous fruit trees; \$1,000 came from the Westside Mosquito Abatement District for insect investigations; \$500 from the California Spray-Chemical Assn. for research on control of insect pests of ornamentals, and \$200 from U.S. Plywood Corp. for research on forest insects.

Louisiana Business

SHREVEPORT, LA.—Shreveport Chemical Enterprises, Inc., has filed a charter amendment with the secretary of state to increase its authorized capital stock to \$422,750.

Louisiana Limestone Distributors, Inc., Alexandria, La., has been organized with capital stock of \$18,500 to deal in agricultural limestone and fertilizer.

RAINS HELP

OKLAHOMA CITY, OKLA.—Rains the past week have benefited crops and partially aided in keeping down grass fires which for a while were very hazardous. Southwestern Oklahoma is still needing more moisture with only half the crop in that area reporting good condition. Other portions are "poor to fair."

Geigy Announces New Diazinon Insecticide

ARDSLEY, N.Y.—Geigy Agricultural Chemicals has announced the introduction of a new Diazinon granular formulation, designated as Diazinon 2½G and recommended for the control of onion maggots.

A tolerance of 0.75 ppm has been established for onions, which means that Diazinon may be used for the control of onion maggot on green onions, onion sets, dry onions, as well as onions grown for seed, Geigy said. A petition is pending for the establishment of a tolerance for Diazinon insecticides on carrots.

Fertilizer Equipment Firm Increases Facility Space

BALTIMORE—A. J. Sackett & Sons Co., Baltimore, maker of fertilizer processing equipment, is increasing its fabricating and warehouse space about 10,000 sq. ft.

The additional facility will be equipped for the fabrication of granular type fertilizer machinery, said A. J. Sackett, Jr., president.

Names Field Agent

PALO ALTO, CAL.—GRS (Growers Residue Service), a department of Hazleton Laboratories, Inc., here, announced that Valley Laboratories of Phoenix has been named its field sampling agent for the state of Arizona.

The department, formerly known as the Growers Service Department, was started about a year ago to provide pesticide residue analyses for western growers.

ENTOMOLOGIST DIES

SAN ANGELO, TEXAS—Dr. Freeman Fuller, extension service entomologist at Texas A&M, died at the age of 33. He held a bachelor's and master's degree from Alabama Polytechnic Institute and a Ph.D. from Texas A&M.

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Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of \$11 per column inch.

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S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
1 2 3 4	1 2	1 2 3 4 5 6	1 2 3 4
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26 27 28 29 30	24 25 26 27 28 29 30	28 29 30	26 27 28 29 30 31
	31		
AUGUST	SEPTEMBER	OCTOBER	NOVEMBER
1 2 3 4 5 6 7 8	1 2 3 4 5	1 2 3	1 2 3 4 5 6 7
9 10 11 12 13 14 15	6 7 8 9 10 11 12	4 5 6 7 8 9 10	8 9 10 11 12 13 14
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30 31	27 28 29 30	25 26 27 28 29 30 31	29 30
DECEMBER	JANUARY	FEBRUARY	MARCH
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